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Social-Structural Effects on the Adoption of the Snowmobile as a Recreational Innovation

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SOCIAL-STRUCTURAL EFFECTS ON THE ADOPTION OF THE SNOWMOBILE AS A RECREATIONAL INNOVATION

BY

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This thesis is approved as a creditable and independent investigation by a candidate for the degree, Doctor of Philosophy, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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SOCIAL-STRUCTURAL EFFECTS ON THE ADOPTION OF THE SNOWMOBILE AS A RECREATIONAL INNOVATION

Abstract

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Under the supervision of Professor Robert Dimit

Social structural factors and individual characteristics related to innovativeness were studied in a random sample of 402 South Dakota owners of registered snowmobiles. Data collection employed a mailed questionnaire. The objectives of the study were to determine: (1) Which, if any, sociopsychological and sociodemographic individual characteristics explain variations in innovativeness with regard to purchasing of snowmobiles; (2) Whether community norm as a structural effect contributes to the explanation of variations in snowmobiler innovativeness when individual characteristics of adoptors are partialed out or controlled; and, (3) Whether the general contours of the adoption-diffusion model may be extended to the area of recreation and leisure.

Findings related to the first objective were obtained through the use of multiple regression analysis. Individual characteristics which had a significant, positive relationship with snowmobiler innovativeness were leisure orientation, perceived opportunity for leisure, and membership in formal organizations. Age and size of hometown showed a negative relationship with innovativeness. Characteristics not significantly associated with innovativeness were: perceived parental socialization for appreciating the outdoors, number of winter

recreational activities engaged in between ages 12 and 17, perceived adequacy of snow for snowmobiling, reading of outdoor recreation oriented magazines, membership in outdoor recreation oriented groups, perceived parental socialization for innovativeness, self-concept regarding innovativeness, education, and income.

Based on partial correlation and multiple regression analysis, the findings for the second objective of the study indicated no significant relationship between perceived community norm on recreational innovativeness and individual innovativeness in purchasing of snowmobiles. A structural effect on innovative recreational behavior of individuals was not observed.

With regard to objective three, it was concluded that the adoption-diffusion perspective is applicable in the sphere of recreational innovation. A combination of 16 structural and individual effects variables as suggested by the literature on adoption-diffusion and recreation succeeded in explaining approximately one-fourth of the variance in individual innovativeness scores ($R^2 = 0.23326$).

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CHAPTER I

INTRODUCTION

Determination of the factors related to innovativeness is an important part of the study of social change. Adoption of innovations has been the focus of a large body of empirical research. The adoption-diffusion model employs a comprehensive approach towards innovativeness which includes "(1) acceptance, (2) over time, (3) of some specific item--an idea or practice, (4) by individuals, groups or other adopting units, linked (5) to specific channels of communication, (6) to a social structure, and (7) to a given system of values or culture" (Katz, Levin, and Hamilton 1963:240). The adoption-diffusion model has been most extensively used by rural sociologists studying the adoption of improved farm practices (Rogers 1962:31). In this area there have been numerous practical implications for agricultural change agents.

The adoption-diffusion model may be applicable to the explanation of social change in other spheres of life. Rogers (1962), for example, notes that this has been done with some success in the areas of medical, educational, and industrial innovations. Anson (1975) has suggested that the adoption-diffusion model should be tested for applicability in the sphere of recreational innovativeness. This would help to determine the range of utility of the perspective. It would also provide a much needed theoretical grounding for recreation studies. If the model succeeds in predicting factors related to

recreational innovativeness, there should be practical payoffs for recreation planners, manufacturers of recreational equipment, and educators in the field of recreation.

The present study is part of a larger project funded by the Agricultural Experiment Station at South Dakota State University, Brookings, South Dakota. The project tests the ability of the adoption-diffusion model to explain variations in innovativeness in the purchase of recreational equipment. The recreational innovation selected for study is the snowmobile. In the examination of snowmobiler innovativeness,[1] the adoption-diffusion approach suggests three distinct areas of concern: (1) personal characteristics associated with snowmobiler innovativeness, (2) information sources used in the decision-making process for snowmobiles, and (3) the influence of community norms on innovativeness as a structural effect on individual innovative behavior (Anson 1975). The characteristics of snowmobile innovators and their sources of information have been dealt with by Anson (forthcoming bulletin). This study focuses on the third area of concern, effects of community norm on innovativeness. Such characteristics of the social system which influence the conduct of system members are called "structural effects." For example, an individual's age, income, education, and his own attitude towards the desirability of trying new things are personal characteristics which help explain how early he will be, relative to other members of his

[1] "Snowmobiler innovativeness" as used here refers to the relative earliness of an individual's first purchase of a snowmobile.

social system, in adopting innovations. Given two individuals who are similar in all these personal characteristics, one could predict that the one who lives in a progressive community where the norm favors innovativeness would be more innovative than the other individual who lives in a conservative community. This influence of community norms on individual innovativeness when personal characteristics are controlled is a structural effect.

In the area of adoption-diffusion research, a handful of studies have explored the effects of community norms on the innovativeness of individuals. These studies suggest the need to consider innovativeness from a social systems (structural) level as well as from a sociopsychological or individual level. To demonstrate the presence or absence of structural effects, it is necessary first to ask: What sociopsychological and sociodemographic individual effects are related to snowmobiler innovativeness? If a community norm is exerting an independent effect on innovativeness, this effect should be in evidence after the individual characteristics of community members are controlled or accounted for.

Statement of the Problem

The focus of this study is on the adoption-diffusion model and its applicability to recreational innovation. The basic question to be answered is: Do individual effects and/or structural effects as suggested by the adoption-diffusion model explain variations in snowmobiler innovativeness?

Importance of the Problem

Few studies have examined the adoption process for recreational items or practices. It is important to know whether an adoption-diffusion approach can be applied to predict innovativeness of individuals in relation to recreational innovations. This study will examine the universality of the adoption-diffusion model.

The structural approach in adoption-diffusion research is a promising, new area of inquiry. Few studies have dealt with structural effects on innovativeness, and these have been incomplete, impressionistic, or based on small samples. One of the best structural effects studies to date, Flinn's 1970 article, deals with innovations in truck gardening. Flinn has done the preliminary development of a method to analyze the effects of perceived community norms on individual innovativeness. The present study incorporates suggestions Flinn makes for the clarification of the structural effects concept. It also extends his approach to a different type of innovation.

Although the main impact of this study is its importance for theory testing and theory building, it will also have practical implications. A knowledge of factors related to recreational innovativeness would be valuable to change agents in this field. The snowmobile itself is big business in outdoor recreation. Production of snowmobiles in the United States leaped from fewer than 10,000 units per year in the early 1960's to a half million in 1970 (Stupay 1971). Snowmobiling is rapidly expanding in South Dakota according to registration

records of the Department of Public Safety in Pierre. The number of registered snowmobiles in the state increased from 7,792 in 1973 to 14,800 by fall, 1974.

Objectives of the Study

The objectives of the study are to determine:

1. Which, if any, sociopsychological and sociodemographic individual characteristics explain snowmobiler innovativeness.

2. Whether community norms contribute to explaining variations in snowmobiler innovativeness when individual characteristics of innovators are controlled.

3. Whether the general contours of the adoption-diffusion model may be extended to the area of recreation and leisure.

CHAPTER II

REVIEW OF LITERATURE

In this section, the previous definitions and uses of the structural effects concept are reviewed. The operation of structural effects in diverse settings is examined to provide further clarification of the concept through examples. These settings include the restaurant (Whyte 1969), the printing shop (Lipset, Trow, and Coleman 1956), the factory (Blau 1957), and the public assistance agency (Blau 1960).

The review of literature then moves into a second general area of concern for this study, the adoption-diffusion perspective. A brief summarization of adoption-diffusion research is given. This is followed by an examination of the application of the adoption-diffusion model to recreational innovations including television (Graham 1954), and a method of training swimmers (Loy 1969). A survey of previous snowmobile studies shows that this particular innovation has not been studied from an adoption-diffusion perspective in the past.

Structural effects and adoption-diffusion are united in the third portion of the review of literature. The use of structural effects to explain innovativeness in relation to improved farming practices is noted in studies by Marsh and Coleman (1956), Van den Ban (1960), and Flinn (1970). The Flinn study is reviewed in depth as a model for further studies. Comments by Anson and Bohlen (1973) suggest

refinements in Flinn's approach which will be incorporated in this study of structural effects on snowmobiler innovativeness.

Structural Effects

Structural effects are characteristics of a social structure which influence behavior of individuals within that structure. "The structural effects of a social value can be isolated by showing that the association between its prevalence in a community or group and certain patterns of conduct is independent of whether an individual holds this value or not" (Blau 1960:180). A social system norm, for example, may favor modernism or traditionalism. Regardless of the value an individual holds, his innovativeness will be directly related to the norms of his social system on innovativeness (Rogers 1962:71). In another area, community norms on juvenile delinquency have been found to have considerable effect on the chances that a youth will become delinquent (Rogers 1962:71). A social system norm favoring modernism, traditionalism, or respect for the law is a structural effect when it influences the behavior of individuals in that system independent of their own personal values.

Structural effects have also been referred to by Lazarsfeld (1959) as contextual properties. He contrasts contextual properties of the collective with primary properties of the individual (herein termed individual effects). Lazarsfeld (1959:72) gives an indication of the reason for studying structural effects when he notes, "Contextual propositions go far toward catching what authors have in mind

when they use such 'holistic' expressions as 'taking the total situation into account' and 'considering structures.'"

Peter Blau has done much to examine and clarify structural effects in sociology. Blau (1957:64) gives a guide for establishing the presence or absence of structural effects,

> The general principle is that ego's X affects not only ego's Y but also alter's Y, the structural effect will be observed, which means that the distribution of X in a group is related to Y even though the individual's X is held constant. Such a finding indicates that the network of relations in the group with respect to X influences Y. It isolates the effects of X on Y that are entirely due to or transmitted by the processes of social interaction.

Patterned interaction, to which this statement refers, occurs under the jurisdiction of systemic norms and is, therefore, an attribute of the social system.

William Whyte (1969:105-107) observed the effect of social structure of restaurants on crying behavior of waitresses. Girls who took the initiative in managing their own affairs cried less than girls who were followers. This is an individual effect due to personal characteristics. Some girls who were followers, however, were well adjusted. They had work situations where other people looked out for them on the job and offered them social support. The supportiveness of the group was a structural effect that resulted in good adjustment despite personality differences of individual waitresses.

The structural effect of group norms was explored by Lipset, Trow, and Coleman (1956) in printing shops. In shops where union members were in agreement on political issues, members were more active

in union politics than in those shops where there was less consensus. It did not matter whether the individual members were liberal or conservative (individual effect), only whether the group expressed consensus or divergence of opinions (structural effect). It should be noted that the structural effect group consensus is an attribute of the collective which has no counterpart at the level of the individual.

Blau (1957:65) provides an example of how social norms have structural effects. "Workers who firmly believe that it is wrong to be a 'rate-buster' are probably less likely than others to exceed informal standards of output. Even workers who see nothing wrong with rate-busting, however, may work slower than they otherwise would if most members of the group believe rate-busting wrong." In this case, the group norm (structural effect) influences the individual's behavior in the direction of conformity regardless of his individual beliefs. In other words, this effect transcends the aspects or characteristics of individuals.

Blau (1960) used data from a pilot study of a public assistance agency to examine structural effects. The main job of caseworkers in the agency was to determine the eligibility of applicants for assistance. This involved home visits and a great deal of paperwork. The caseworkers were organized into units of five or six to one supervisor. Twelve supervisory units were studied by observation and by interviewing the 60 caseworkers belonging to these units.

The independent variable in Blau's study was pro-client values. This was measured by the caseworker's response to a question whether

the amount of assistance should be increased, remain the same, or be decreased. Blau wanted to know if the prevalence of pro-client values in a supervisory unit (structural effect) affects the performance of duties by the individual members independently of their own attitudes toward clients (individual effect). The groups were divided into:

1. Those where a majority of the members favored raising the assistance budget for all clients (pro-client group value), and

2. Those groups where the majority did not favor increasing assistance (absence of pro-client group value).

Performance of duties was classified by four criteria:

1. Orientation to work--Was the only concern of the caseworker checking eligibility or did he also furnish casework services?

2. Visits to recipients--Did the caseworker make 40 or fewer home visits per month or did he make more than 40 visits?

3. Delegating responsibility to clients--Was the caseworker willing or unwilling to delegate responsibility to clients?

4. Involvement with work--Did the caseworker worry much or little about his work after office hours?

Structural effects were demonstrated since, regardless of their personal attitudes, members of groups with pro-client values were more oriented towards casework than were members of the other groups. Of those individuals having pro-client attitudes, 60 percent in pro-client groups were service oriented as compared to 44 percent in other groups; of individuals who did not have pro-client values, 44 percent were service oriented in pro-client groups but only 27 percent were service

oriented in the other groups. This is what Blau calls a direct structural effect since the effect of values in the group is parallel to the effects of the individual's value orientations, i.e. a positive relationship exists. Group values were shown to be an important factor for controlling or regulating individual behavior.

In addition to direct structural effects, Blau observed inverse effects (negative relationships). In these cases, pro-client group values and pro-client values of the individual influenced behavior in opposite directions. This was the case with the third criterion of performance, delegating responsibility to clients, and with the fourth criterion, worrying about cases after working hours. Individuals with pro-client attitudes were less willing to delegate responsibility to clients and they worried more about cases. However, the prevalence of pro-client values in a group increased willingness to delegate authority and decreased worrying. Blau explains the individual effect as concern for clients, willingness to be responsible and spend time seeing that clients make the best choices. On the group level, pro-client values seem to encourage a professional, detached attitude towards clients and a fostering of their independence. The structural effect in this case was to curb emotional reactions of the concerned individuals and to substitute professional concern more in accord with group norms. Blau also studied structural effects of group cohesiveness and of the communication network in the public assistance agency.

Before considering the implications of structural effects on individual innovativeness, it is necessary to review briefly the

adoption-diffusion perspective on innovativeness. Attention will also be given to studies of recreational innovativeness following this approach.

Adoption-Diffusion

The adoption-diffusion perspective is used to explain the diffusion of innovations. The basic elements of the diffusion process are: (1) the innovation, (2) its communication from one individual to another, (3) within a social system, and (4) over time. Change agents who wish to introduce new products or ideas into a social system find great utility in this approach. The adoption process is viewed as a mental process through which an individual passes in making his decision whether or not to adopt a particular innovation. Five stages are involved:

1. Awareness--The individual is exposed to the innovation but lacks complete knowledge of it.

2. Interest--He becomes interested in the innovation and seeks additional information about it.

3. Evaluation--He considers how the innovation would apply to his own situation.

4. Trial--The innovation is tested on a small scale to see how well it will work.

5. Adoption--The individual decides to continue using the innovation on a full-scale basis (Lionberger 1960).

Adoption-diffusion research has focused attention on several areas of interest. One of these is the examination of the information sources used in the various stages of the adoption process. Generally, impersonal information sources are more important in the earlier stages while personal sources become more influential in the last three stages. Other research has attempted to locate and characterize opinion leaders who influence the adoption decision-making of others. Still another concern of the adoption-diffusion perspective is to identify personal characteristics associated with innovativeness. These traits include such things as high income, large farm size, placing a positive value on science, and having relatively more formal education than individuals who are slow to adopt changes. The adoption-diffusion approach also deals with structural effects or characteristics of the social system which influence the adoption behavior of its members. Systems norms of traditionalism or modernism are studied to determine their relationship to individual innovativeness.

The adoption and diffusion of innovations is a well-researched topic in the field of social change. Everett Rogers (1962) reviewed 506 diffusion studies done by anthropologists, sociologists, rural sociologists, educators, and industrial and medical researchers. The Diffusion Documents Center at Michigan State University contains over 1,700 studies in this area (Flinn 1970). A classic study by Ryan and Gross (1943) of hybrid-seed-corn adoption lead the way for numerous studies of farm innovation adoption. Basic similarities have been

found in the adoption of such diverse types of innovations as 2,4-D weed spray and bulk milk tanks (Lionberger 1960), driver training (Ross 1958), birth control methods (Hill, et al. 1959), and radio sets for ham operators (Bowers 1938).

While many adoption-diffusion studies have been done, they have not been developed from a systematic, logico-deductive adoption theory (Rogers 1962). Existing research has not progressed beyond lists of empirical generalizations such as those which conclude the books by Rogers (1962) and Rogers and Shoemaker (1971) which summarize research in the field. There is a recognized need to develop a body of theory relevant to adoption behavior. If this were done, it would facilitate research in the adoption of farm practices and allow closer coordination with other problem areas (Fliegel 1956:292). This need for theory development could be served by placing existing knowledge about adoption-diffusion within an overall social action and social change perspective (Bohlen no date:21). Propositions to facilitate research could then be derived from the theory (Fliegel 1956:292).

Certain characteristics of innovations themselves have been found to influence their subsequent rate of adoption. Rogers (1962:124) gives five such characteristics of innovations: relative advantage, compatibility, complexity, divisibility, and communicability. David Holden (1972:464) suggests that factors useful in predicting innovativeness with regard to utilitarian items may not apply to recreational innovations.

> Perhaps because of the high level of agreement on the relationship between value orientations and the adoption of practices, many might assume that the same values would be uncovered in relationship to the adoption of other things. This assumption has not, to my knowledge, been tested. Do these values hold, for example, on items that are used, not in production or in medicine, but largely for recreation, such as devices to play tape recordings in automobiles?

Few studies have been concerned with recreational innovativeness. Noteworthy exceptions to this lack of research are studies by Saxon Graham (1954) and John Loy, Jr. (1969). Saxon Graham examined the adoption of television in terms of cultural compatibility. His sample consisted of 150 families of different socioeconomic statuses where the head was between 30 and 40 years of age. His findings were that adopters of television had 12 years or less education, a smaller weekly income than nonadopters, and preferred passive recreation such as radio listening and movie attendance.

John Loy, Jr. (1969) researched the adoption of a new swimmers' training technique by 48 English swimming coaches. The variables with best predictability of innovativeness were (in order of importance): venturesomeness, professional status, imaginativeness, educational status, dominance, sociability, cosmopoliteness, and self-sufficiency.

The snowmobile has not previously been studied from an adoption-diffusion perspective. The Snowmobile and Off-the-Road Vehicle Research Symposium (Chubb 1971) at Michigan State University reviewed recent snowmobile research studies. All studies could be classified under either: (1) use and user studies, or (2) environmental impact studies. The Upper Great Lakes Regional Commission Snowmobile Study

is typical of use and user studies. It covered " . . . where people traveled to snowmobile, the types of areas that they were looking for, the amount of expenditures, the family make-up on these trips, who went on these trips, how many trips they made, and how many they were planning for the following year" (Eddie in Chubb 1971:44). Such studies have not been concerned with the snowmobiler as a recreational innovator.

Structural Effects in Adoption-Diffusion Research

The basic concept of structural effects used by Blau (1957, 1960) has been incorporated into the adoption-diffusion research tradition. Flinn (1970) and other researchers have studied the influence of community norms on individual innovativeness.

If a structural effect of community norms on innovativeness is to be found, the first requirement is that communities in the study have different norms on innovativeness. Marsh and Coleman (1956) interviewed 393 farm operators in 13 neighborhoods in Washington County, Kentucky. All operators in the 13 neighborhoods were included. The authors chose to define neighborhood loosely as it had been designated in previous work in that county. Operators were asked if they had tried and were following 21 recommended farm practices. The percentage of applicable practices adopted was used as an adoption score. When scores of individuals in each neighborhood were averaged, there was a range in mean adoption from a low of 25 to a high of 57. The extreme neighborhoods were within three miles of each other, but farmers in

them said that they did not regularly visit any farmer in the other neighborhoods.

Anne Willem Van den Ban (1960) studied differences in adoption of new farm practices by locality group in Wisconsin. She did case studies of two townships that had similar soil productivity, but differed considerably on their adoption scores. This allowed her to explore possible causes of their divergent adoption scores. She noted that township was an arbitrary unit, but if differences in adoption exist among townships, they would be even more likely to be found among the more meaningful units of neighborhoods. Other studies showing that innovativeness varies between neighborhoods, communities, townships, regions, and development blocks include those by Rahudker (1960), Young and Coleman (1962), and Rogers and Burdge (1962).

William Flinn (1970) applied the concept of structural effects to the prediction of innovativeness. Flinn explored several alternatives for isolating structural effects. He criticized previous studies of the effect of community norms on innovativeness which measured norms by averaging the innovativeness scores of farmers in the community. Actual innovativeness rates measure overt behavior, but this may differ from the normative system.

Flinn used a random sample of 76 truck farmers in seven communities of Washington County, Ohio. Flinn first determined individual norms on innovativeness by asking farmers, "What is your opinion of truck growers around here who are always the first to adopt new ideas in truck growing?" The structural effect, following Blau's method,

is the community norm on innovativeness. Communities were divided into those where 80 percent or more of those sampled favored innovators and those where 67 percent or fewer of the residents sampled favored innovators. The data indicated that regardless of the norms of the individual, those living in communities where innovators were favorably viewed were more innovative in their actual adoption of new practices.

In order to improve his analysis, Flinn incorporated the use of partial correlation suggested by Tannenbaum and Bachman (1964). The truck-growers' attitudes towards innovators were held constant while the correlation between the community norm and innovativeness was examined. Flinn also controlled for age, education, social status, and acres in truck crops. Community innovativeness norm was determined by the percent of members having positive attitudes towards innovators, thus avoiding the arbitrary division of communities into two categories. In this study, the zero-order correlation between community image of innovators and individual's innovativeness was 0.379. When the five personal effects variables discussed above were partialed out, the correlation remained positive and significant ($r = 0.214$), indicating that a structural effect still existed after personal factors were accounted for.

Flinn introduced a further refinement into the study as suggested by Campbell and Alexander (1965). These researchers maintain that in order to say that the community attitude towards innovators is influential, one must know whether the people of the community actually perceive the norm and act according to it. Perceived community values

on innovativeness was studied through the question: "In your opinion, compared to other communities around here, is your community (a) above average in adopting of new truck farming ideas? (b) below average? (c) don't know." The zero-order correlation between perceived community values towards innovativeness and the farmer's innovativeness was 0.225. When the five personal effects variables were again controlled by partial-order correlation, a structural effect still remained ($r = 0.215$). Flinn suggests that in future research, a better measure of perceived structural effect would look not at the farmers' perceptions of the community's actual innovativeness (as his study did) but at the farmers' perception of whether most farmers in the community feel that innovativeness is important or not.

Anson and Bohlen (1973) commend Flinn's use of controls, but feel that other variables known to influence innovativeness should also have been controlled. These would include: opinion leadership, farming experience, cosmopoliteness, social participation, and information sources, all of which are personal characteristics known to correlate with innovative behavior (Jones 1967; Havens 1962).

Anson and Bohlen (1973:4) propose a multi-staged model to depict structural influences on the individual's degree of innovative behavior:

$$X_1 \longrightarrow X_2 \longrightarrow X_3 \longrightarrow X_4$$

where:

X_1 = actual community innovativeness,

X_2 = farm operator perception of community innovativeness,

X_3 = farm operator attitudes, perceptions or self-concept regarding innovativeness and its desirability, and

X_4 = adoption and/or innovative behavior.

Variables X_1 and X_2 are structural effects in this model.

Summary of Review of Literature

Structural effects are characteristics of a social system which influence the behavior of individuals in that system independent of their personal values or characteristics (Blau 1960). Structural effects have sometimes been referred to as "contextual properties" (Lazarsfeld 1959). The concept has been used to examine the relationship between restaurant structure and the crying behavior of waitresses (Whyte 1969), the effect of political consensus in printing shops on union activity (Lipset, Trow, and Coleman 1956), the effect of group norms against rate-busting on production by factory workers (Blau 1957), and the effect of supervisory group pro-client values on caseworkers' attitudes and behavior towards clients (Blau 1960). Structural effects have also been used to focus on the effect of a community norm regarding innovativeness on adoption behavior of individual community members (Marsh and Coleman 1956; Van den Ban 1960; and Flinn 1970).

Numerous adoption-diffusion studies have established the factors related to the adoption of agricultural practices and of several other types of innovations (Rogers 1962). Characteristics of the innovation itself have also been shown to influence adoption (Rogers 1962). In

light of this, it is significant that very few adoption studies have considered recreational innovations (Graham 1954; Loy 1969). None have dealt with snowmobiles as innovations (Chubb 1971). Structural effects, therefore, may be useful in predicting individual adoption of the snowmobile as a recreational innovation.

CHAPTER III

THEORETICAL PERSPECTIVE

This section includes definitions of basic concepts, the overall theoretical framework, general hypotheses, and more specific research hypotheses.

Concepts

An innovation is any idea perceived as new by the individual (Rogers 1962:13). It may be an organizational principle, a concept, or a technological item. Snowmobiles are an innovation in outdoor recreation equipment first made available to the public in the late 1950's. The rate of adoption of an innovation is influenced by such attributes of the innovation as relative advantage, compatibility, complexity, trialability, and observability (Rogers and Shoemaker 1971).

Innovativeness is the degree to which an individual is relatively early in adopting new ideas or items as compared to other members of his social system (Rogers 1962:19).

The social system is a population of individuals engaged in collective problem-solving behavior (Rogers 1962:14). The community may be considered to be a social system (or subsystem) because "community" implies shared interests, characteristics, and association as well as a clustering of people in a geographical area (Warren 1972:6).

Structural effects are characteristics of a social structure which influence behavior of individuals within that structure. They

are systemic attributes of the collectivity as a whole. A structural effect may have its counterpart in the individual as in Blau's (1960) work with pro-client values of individual caseworkers and of supervisory units in a public assistance agency. Other structural effects may have no parallel on the individual level as with political consensus as a structural effect in Lipset, Trow, and Coleman's (1956) study of printing shop unions.

Norms of a community which influence innovativeness of community members are structural effects. "A norm is a standard of conduct in a particular group; it enables a person to determine in advance how his actions will be judged by other persons and it provides those other persons with criteria for approval and disapproval" (Caplow in Zito 1975:15). The action and decision-making of individuals is influenced by their perception of the norms that prevail in their social systems. A community norm on innovativeness is a structural effect on individual innovative behavior. The potential adopter weighs the community norm on innovativeness along with his own personal and situational factors. His final decision to reject or adopt an innovation is the result of a combination of structural and individual effects.

Individual effects are personal or situational characteristics of an individual which influence his behavior. The category of individual effects includes both sociopsychological and sociodemographic variables. Wilkening (1950) examined the acceptance of agricultural innovations from a sociopsychological point of view. The sociopsychological variables he used included attitudes towards education for

boys entering farming, conservatism in nonagricultural areas of life, and dependence upon neighborhood and kinship ties. Sociopsychological individual effects variables used in this study of snowmobiler innovativeness include values in relation to leisure and traditionalism, perceived parental socialization for leisure and for innovativeness, and self-concept regarding innovativeness. Other individual effects may be termed sociodemographic factors. These are the standard sociological variables which describe the individual's situation in terms of education, age, income, and size of hometown. Rogers and Shoemaker (1971) reviewed studies that attempted to explain variation in innovativeness by age, education, or social status of adopters. The relationship between early adoption and age was variable. In the 228 studies that used age as a factor, 19 percent found that early adopters were younger than later adopters, 48 percent found no relationship, and 33 percent found that early adopters were older than later adopters (Rogers and Shoemaker 1971:352-354). For education, a positive relationship with early adoption was found in 74 percent of 275 studies which dealt with this variable (Rogers and Shoemaker 1971: 354-356). Social status also showed a positive relationship with early adoption in 68 percent of 402 studies (Rogers and Shoemaker 1971:357-360). Christensen and Yoesting (1973) suggest that there is a need to combine sociopsychological variables such as attitude and motivation with sociodemographic variables to explain recreation patterns.

Perception is the way an individual responds to any sense or impression he detects (Lindesmith and Strauss 1956:85). An individual does not respond directly to a situation; he responds, rather, to his definition of the situation. Action can only be meaningfully explained if this perceptual context is considered (Rogers 1962:303). Thus, perceived parental socialization for innovativeness or appreciating the outdoors, perceived opportunity for leisure, and perceived adequacy of snow for snowmobiling affect snowmobiler innovativeness more directly than do the actual situations which the individual is interpreting in his perceptions.

Perceived opportunity for use is one source of motivation to innovate. This is the applicability or potential for use that an innovation is seen to have in the individual's own situation. Havens (1965:158) used herd size as an indication of the potential farmers had for the use of bulk-milk tanks in their dairy operations. Larger herd size was associated with earlier adoption of the milk tanks in his sample. For more subjective factors relating to opportunity for use of an innovation, the individual's perception or definition of the situation may be more important than the actual factors themselves. Perceived opportunities for leisure and perceived adequacy of snowfall are factors affecting a potential snowmobile owner's use for a snowmobile.

Cosmopoliteness is the degree to which one's orientation is focused outside of a particular social system (Rogers 1962:17, 102). Cosmopolite information sources are those coming from outside the

social system. Cosmopolite information sources tend to be more important for innovators than for later adopters (Ryan and Gross 1943; Katz 1961). This occurs because new ideas usually originate outside the local community or neighborhood. Individuals with cosmopolite information sources become aware of innovations which they may later decide to adopt. For potential snowmobile innovators, outdoor recreation oriented magazines are a cosmopolite information source.

Formal social participation is one aspect of communication behavior. Organizational participation increases an individual's exposure to information about innovations. Social participation in formal organizations involves both the number of organizations to which the individual belongs and the level of activity he maintains in them.

Rogers and Shoemaker (1971:368-369) found support for the generalization that "earlier adopters have more social participation than later adopters." Out of 149 studies which dealt with social participation, 109 or 73 percent supported the positive relationship with early adoption. However, Coughenour (1964:338) indicates the need to distinguish between general social participation and participation in organizations directly involved in the transmission of new ideas about the type of innovations being studied. This specific type of participation should be more strongly related to adoption behavior. Coughenour dealt with farmers' organizations and agricultural innovations. Snowmobile adoption is expected to be facilitated by participation in formal organizations, and especially by participation in recreation oriented groups.

Values are a basic component of social action theory. A value is "a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action" (Kluckhohn 1951:395). Values are sometimes considered to be more general orientations than attitudes which are directed towards specific objects or ideas. However, they are basically similar concepts which will be used interchangeably in the present study. Value orientations are asserted to influence the process of adoption. They do this by serving as criteria for the individual's decision among alternatives (Ramsey, Polson, and Spencer 1959:35). Hoffer and Strangland (1958) found that the values of efficiency, self-reliance, and progress made a farmer more likely to adopt certain approved practices in corn growing. Farmers whose values were security or conservatism were either late to adopt the innovations or never did adopt them. Ramsey, Polson, and Spencer (1959), in a similar study, found that value orientations favoring achievement, science, and material comfort were positively associated with adoption of four approved dairy practices while values of security and traditionalism were negatively associated with innovativeness. Traditionalism and leisure orientation are values of individuals which influence their recreational innovativeness.

Traditionalism makes precedence the criterion of decision-making. A traditional individual believes that ways which have worked in the past are better than new, untested methods. Therefore, a value of traditionalism would be expected to slow the adoption of innovations

such as the snowmobile. Traditional individuals would tend to wait until others had tried the new equipment before they would consider adopting it themselves. A negative relationship between traditionalism and innovativeness has been demonstrated by Hoffer and Strangland (1958), Ramsey, Polson, and Spencer (1959), and Bose (1962).

Leisure orientation is another value which may influence recreational innovation. Yoesting and Burkhead (1971:8-9) stress the need for sociologists to give more concern to the attitudes people have towards their leisure activities and the ways these attitudes influence leisure behavior. Neulinger and Breit (1971) used factor analysis to examine the dimensions of leisure attitudes. One factor that emerged was the affinity for leisure. Included in this factor were liking for leisure, perceived capacity for leisure, and guilt feelings about leisure. Burdge (1961) developed a 12-item scale to measure leisure orientation.

Along with a positive value on leisure goes a generally lowered emphasis on the importance of work. The ascetic spirit of the Protestant Ethic allows little room for an appreciation of leisure. Goldstein and Eichhorn (1961), in a study of the changing Protestant Ethic, found that farmers' work orientations influence their behavior in relation to health, work, and leisure.

Leisure orientation, including both an affinity for leisure and a de-emphasis on work, is expected to increase recreational innovativeness. An individual with a stronge leisure orientation would be more likely to express interest in new types of recreational equipment and

to spend money on them than would an individual who places a low value on leisure activity. The effect of leisure orientation on recreational behavior is supported by a study of Christensen and Yoesting (1973) which found that high users of outdoor recreation facilities have significantly higher leisure orientation scores than do low users.

Socialization pertains to "the processes by which individuals selectively acquire the skills, knowledge, attitudes, values, and motives current in the groups of which they are or will become members" (Sewell in Stone and Farberman 1970:566). Leisure activity is socially learned. "Acquiring the skills, experience, relational norms, equipment, attitudes, and frequently the taste required for participation in many kinds of leisure activities is a part of the socialization process" (Kelly 1974:182). The shaping of an individual's recreational interests through socialization in the family, peer groups, and other interaction situations is described by Burch (1969: 138) in his "personal community hypothesis." The influence of early childhood recreation activities on later participation has been studied by Burch and Wenger (1967), Hendee (1969), Sofranko and Nolan (1972), the Outdoor Recreation Resources Review Commission (1962a and b), Yoesting and Burkhead (1973), and Christensen (1972).

Early socialization for recreational activities such as snowmobiling can be studied through the individual's perception of whether his parents encouraged him to appreciate the outdoors. Another aspect of perceived childhood socialization is remembered extent of participation in various outdoor winter recreation activities between ages 12

to 17. For recreational innovativeness, perceived parental encouragement to appreciate new things and ideas may be influential.

Self-concept is "that organization of qualities that the individual attributes to himself" (Kinch 1963:481). Interactionist theory states that self-concept emerges from social interaction. Self-concept of the individual, in turn, guides or influences his behavior (Kinch 1963).

Rogers (1957) indicates that an individual's self-rating (self-concept) of his adoption behavior may sometimes be more meaningful than measures of actual adoption. In a sample of 23 farm operators, Rogers found a correlation of +0.69 between self-rating and adoption of 24 recommended farm practices. This indicates that self-ratings of innovativeness are useful in predicting adoption. Farmers' self-ratings on innovativeness were significantly associated with adoption of nitrogenous fertilizers in a study of 200 Indian farmers (Moulik, Hrabovszky, and Rae 1967). This suggests that self-concept regarding innovativeness influences the individual's actual innovative behavior.

Theoretical Framework

The theoretical framework shows the relationships that exist among the basic concepts of the preceding section. George V. Zito (1975) presents such a scheme in diagrammatic form. The theorists he draws on include: Talcott Parsons, Charles Horton Cooley, and George Herbert Mead. Such eclecticism need not be a cause for alarm. As Jonathan Turner (1974a) explains, the differences between Parsons'

Action Theory and Symbolic Interactionism have been overemphasized. The two perspectives are basically similar. The only real difference is in methological and theory building strategy. A combination of both approaches takes advantage of Parsons' concentration on structural features of the social system and of the Symbolic Interactionists' attention to sociopsychological concepts.

Zito's scheme is presented in condensed form in Figure 1. The diagram grows from the three systems which together make up society. The cultural system, social system, and personality system are three ways activity is structured in Parsons' theory. The cultural system consists of a set of shared values which are transmitted to future generations. These values are collective conceptions of the desirable. The social system is a set of institutions which set standards for acceptable behavior. The personality system is composed of properties characterizing individuals (Zito 1975:4-8).

In the cultural system, differences in values occur where ethnic, regional, and class differences are found. Subcultures bound together by shared values come to exist within the larger culture. The norms of subcultures may differ from those of society as a whole (Zito 1975:17).

The cultural and the social systems are connected by the process of institutionalization. This process transforms values into institutions, the structures which serve to maintain values.

In the social system, institutions maintain values. They also establish and maintain norms, "values relating to our expectations

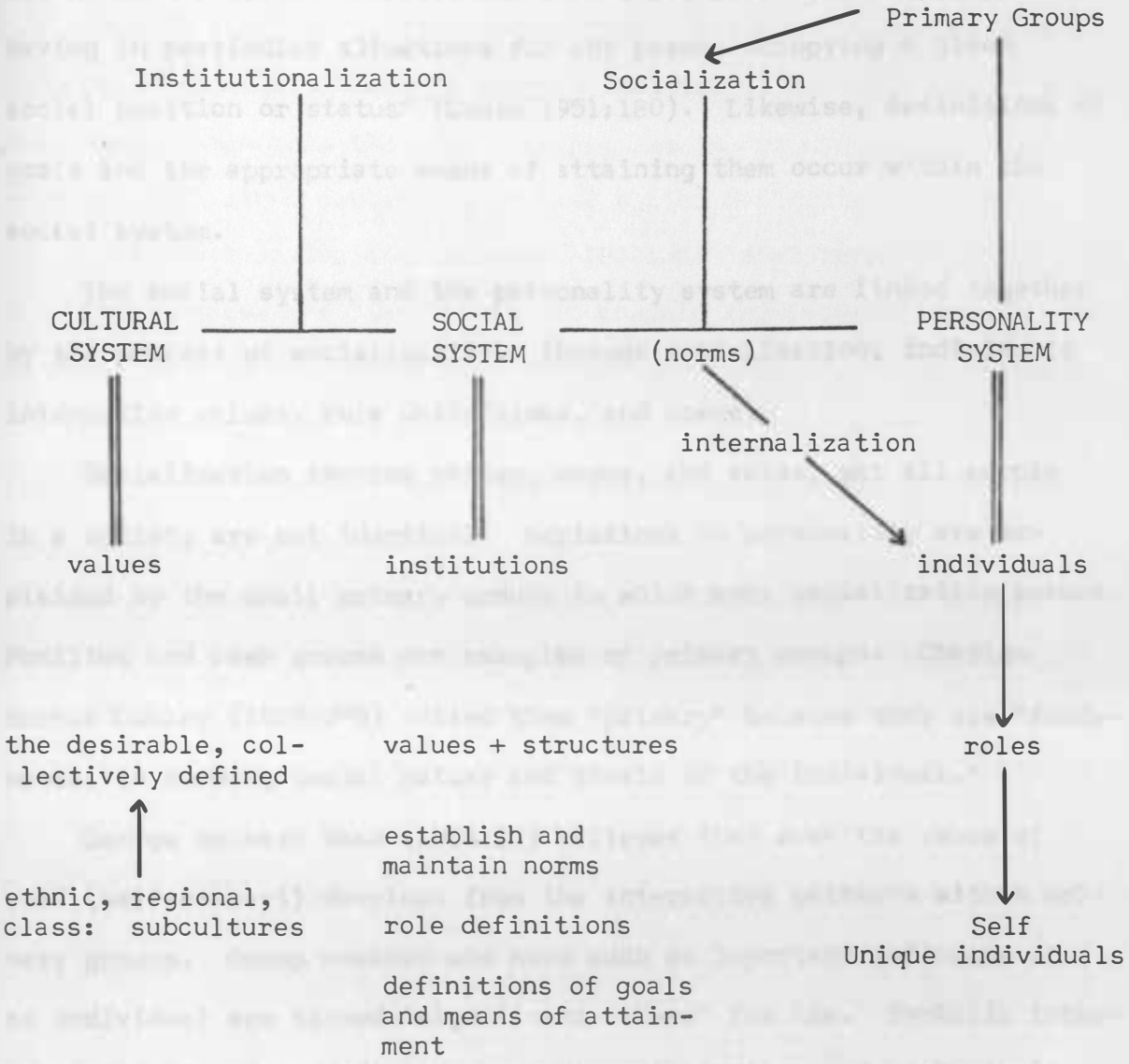

FIGURE 1. THEORETICAL FRAMEWORK AS ADAPTED FROM (GEORGE V. ZITO 1975:22,26,28,36).

regarding performance" (Zito 1975:15). Definitions of roles are part of the social system. A role is "a socially prescribed way of behaving in particular situations for any person occupying a given social position or status" (Coutu 1951:180). Likewise, definitions of goals and the appropriate means of attaining them occur within the social system.

The social system and the personality system are linked together by the process of socialization. Through socialization, individuals internalize values, role definitions, and norms.

Socialization teaches values, norms, and roles, yet all people in a society are not identical. Variations in personality are explained by the small primary groups in which most socialization occurs. Families and peer groups are examples of primary groups. Charles Horton Cooley (1922:279) called them "primary" because they are "fundamental in forming social nature and ideals of the individual."

George Herbert Mead (1934:23) believed that even the sense of self (self-concept) develops from the interactive patterns within primary groups. Group members who have such an important influence on an individual are termed "significant others" for him. Symbolic interactionists draw on Mead's ideas about socialization and on Cooley's use of primary groups and the "looking-glass self." They are particularly concerned with the way social symbols are involved in socialization. Experience is perceived and interpreted through the use of the symbols of language. The symbolic interactionists base their theory

on a stimulus-interpretation-response model which emphasizes the importance of language.

Young people internalize social norms, but they also absorb much extraneous material. Through the internalization process, social norms are incorporated into the self-concept, but in our changing society many new situations develop which lack social definitions or for which the guides to behavior are unclear. The individual faces identity problems, because his "self" does not contain knowledge of role models he needs to cope with new circumstances (Zito 1975:23). All individuals in a society have much in common because of their socialization. They also have undergone unique experiences during socialization which makes each person a unique individual.

Zito's (1975) model demonstrates the relationship that exists among the systems, processes, and elements of society. Going beyond this basic model, Parsons and Shils (1952) combine a number of these concepts in order to describe the dynamic situations of real life which they term "social acts." Figure 2 shows that the elements of the social act are:

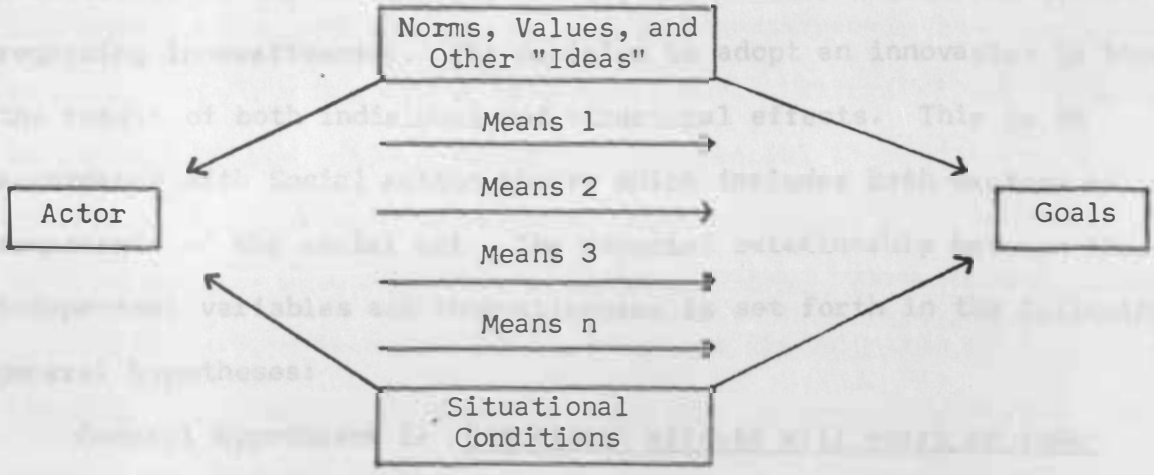

FIGURE 2. THE SOCIAL ACT (TURNER 1974b:32).

According to Social Action theorists, the actor wishes to attain certain socially defined goals. In any given situation, a number of possible orientations or means to attain the goals exist. The actor must make a decision or choice between these means. This choice is guided by norms and values. It is also influenced by situational factors. In the case of adoption behavior, the actor's values, his social situation, and the norms of his social system on innovativeness either encourage him to try an innovation or to retain the old ways. Thus, to explain innovativeness, it is necessary to consider the characteristics of the actor, his situation, his values, and the norms of the social system. Social Action theory directs attention to the need to consider all relevant factors in explaining an individual's choice to adopt or reject an innovation.

General Hypotheses

Adoption-diffusion theory suggests that innovative behavior is influenced by both (1) sociopsychological and sociodemographic characteristics of the individual, and (2) the norm of his social system regarding innovativeness. The decision to adopt an innovation is thus the result of both individual and structural effects. This is in accordance with Social Action theory which includes both factors as components of the social act. The expected relationship between these independent variables and innovativeness is set forth in the following general hypotheses:

General Hypotheses 1: Structural effects will exert an independent influence on innovative behavior.

General Hypothesis 2: Individual effects will exert an independent influence on innovative behavior.

General Hypothesis 3: Structural effects and individual effects taken together will explain variation in individual innovative behavior.

The general hypothesis of structural effects on individual innovativeness has received some support in the literature. Rogers and Shoemaker (1971:347) in a review of empirical studies on the subject found seven supporting studies and no studies that did not support the hypothesis. Studies cited were: Davis (1968), Flinn (1961), Flinn (1963), Qadir (1966), Rogers and Burdge (1962), Saxena (1968), and Van den Ban (1960). This is a relatively small number of studies for a topic as central to sociology as social system norms. Flinn (1970:984) suggests, "Perhaps a partial explanation lies in the difficulty of measuring values and norms and in the survey sampling procedures which make isolated individuals the unit of analysis."

The second general hypothesis of individual effects has wide support in the literature. For a recreational innovation, however, the usefulness of variables known to affect innovativeness in other spheres of human activity has yet to be established. Factors closely related to recreation and leisure may be more successful in predicting variations in snowmobiler innovativeness than variables used in previous studies dealing with other types of innovations. Saxon Graham (1956) found a situation like this in his study of the adoption of television. Recreational behavior such as participation in sports, visiting, and reading habits were closely related to the acceptance or rejection of

television. Relevant individual effects related to recreation may include:

1. Perceived parental socialization for appreciating the outdoors (Burch 1969).

2. Number of winter recreational activities engaged in between ages 12 and 17 (Burch and Wenger 1967; Hendee 1969; Sofranko and Nolan 1972; ORRRC 1962 a and b; Yoesting and Burkhead 1973; Christensen 1972; Kelly 1974).

3. Leisure orientation (Yoesting and Burkhead 1971; Christensen and Yoesting 1973).

4. Perceived opportunity for leisure (Havens 1965).

5. Perceived adequacy of snow for snowmobiling (Havens 1965).

6. Reading of outdoor recreation oriented magazines (cosmopoliteness) (Ryan and Gross 1943; Katz 1961).

7. Membership in outdoor recreation oriented groups (Coughenour 1964).

The literature on adoption of innovations suggests a number of other individual effects which may influence the individual's innovative behavior with regard to any kind of innovation. These include the following:

8. Membership in formal organizations (Rogers and Shoemaker 1971:368-369).

9. Level of participation in formal organizations (Rogers and Shoemaker 1971:368-369).

10. Perceived parental socialization for innovativeness.

11. Traditionalism (Hoffer and Strangland 1958; Ramsey, Polson and Spencer 1969; Bose 1962).

12. Self-concept regarding innovativeness (Rogers 1957; Moulik, Hrabovsky, Rae 1967).

13. Age (Rogers and Shoemaker 1971:352-354).

14. Education (Rogers and Shoemaker 1971:354-356).

15. Size of hometown (Yoesting and Burkhead 1973).

16. Income (Rogers and Shoemaker 1971:357-360).

The third general hypothesis states that structural effects and individual effects taken together will explain individual innovative behavior. If this hypothesis holds true, it will mean that innovativeness can be predicted best by a combination of both types of variables. This could lead to the development of a processual model to predict innovativeness.

Research Hypotheses

Four research hypotheses will be examined. They deal with prediction of innovativeness by: (1) structural effects, (2) recreation-related individual effects, (3) other individual effects, and (4) a combination of all of these variables.

1. The structural effect of the community's norm on innovativeness as perceived by the individual (X_0) will explain variance in individual innovativeness scores (Y).

2. The individual effects of variation in the independent variables (X_1 through X_7) related to recreation will explain variance in individual innovativeness scores (Y) where the independent variables are defined as:

X_1 perceived parental socialization for appreciating the outdoors,

X_2 number of winter recreational activities engaged in between ages 12 and 17,

X_3 leisure orientation,

X_4 perceived opportunity for leisure,

X_5 perceived adequacy of snow for snowmobiling,

X_6 reading of outdoor recreation oriented magazines (cosmopoliteness), and

X_7 membership in outdoor recreation oriented groups.

3. Variation in other individual effects independent variables (X_8 through X_{16}) will explain variance in individual innovativeness scores (Y) where the independent variables are defined as:

X_8 membership in formal organizations,

X_9 level of participation in formal organizations,

X_{10} perceived parental socialization for innovativeness,

X_{11} traditionalism,

X_{12} self-concept regarding innovativeness,

X_{13} age,

X_{14} education,

X_{15} size of hometown, and

X_{16} income.

4. Variation in structural and individual effects measured by independent variables (X_0 and X_1 through X_{16}) taken together will explain variance in individual innovativeness scores (Y).

CHAPTER IV

METHODOLOGY

This section includes a discussion of the units of analysis, sampling procedure, research instrument, and operational definitions of concepts.

Units of Analysis

The individual snowmobile owner is the unit of analysis. Structural effects are operationalized in terms of the individual's perception of the norm on innovativeness for the social system to which he belongs. The use of the individual rather than the social system as the unit of analysis is suggested by Flinn (1970).

The population is all private snowmobile owners who registered their snowmobiles in South Dakota in 1974. Not included in the sampling frame are those farmers and other owners who did not register their snowmobiles because they were used exclusively on the owners' land. A distinction must also be made between owners in whose name the vehicle is registered and users of the snowmobile. This study is directed at owners.

Mr. George F. Bennet in the Department of Public Safety authorized Central Data Processing to make available a list of snowmobile owners. This sampling frame was arrayed by county of residence. It provided the owner's name, address, county in which the snowmobile was registered, and model year.

Sampling Procedure

It was decided to use a sample size of approximately 400. This was partially because 400 was a manageable size for coding and processing given the relatively long length of the questionnaire. Also, it was advisable to concentrate effort on maximizing rate of return through intensive follow-up mailings. Money available for mailing and follow-up was another determining factor for sample size.

A random sample was used. In order to get a sample size of approximately 400, it was necessary to choose 2.70 percent of the population (400 ÷ 14,800 or the sample size divided by the total number of snowmobiles registered in the state in 1974). A fixed proportion of 2.70 percent was drawn from each county's registration list. This was done with the use of a table of random numbers. If the name of a company was drawn, it was replaced with that of a randomly chosen individual from the same county. If a snowmobile was registered in more than one name, a die was tossed to select the respondent.

The Research Instrument

The research instrument was a mailed questionnaire (see Appendix I). Financial considerations and the nature of the sample were most compatible with this method of data collection.

Mailed questionnaires often produce low response rates. Previous snowmobile use and user studies have indicated return rates of 39.5 percent (Kuehn 1971:20), 72 percent (Eddie 1971:46), and 70.6 percent

(Lanier and Chubb 1971:61). Kerlinger (1973:414) states that in reference to mail out questionnaires, "Returns of less than 40 to 50 percent are common. Higher percentages are rare." To improve returns, the state snowmobile association and local clubs were sent letters asking their members to cooperate if contacted. Two follow-up mailings served to increase returns. The results of these returns are shown in Table 1.

TABLE I

QUESTIONNAIRE RETURNS

	Sent	Returned	Refused
First Mail Out (October 8, 1974)	402	133	15
Second Mail Out (November 4, 1974)	254	90	8
Third Mail Out (December 16, 1974)	180	16	2
Totals		N = 239	25

The rate of completion of usable questionnaires was 59.5 percent (239 ÷ 402). To ascertain whether or not the sample was biased due to low response rate, a comparison can be made between respondents answering the first, second, and third mail outs. The assumption is made that those needing prompting to respond resemble nonrespondents. If, given this assumption, the three response groups do not differ significantly on selected characteristics, this tends to suggest that the sample is representative of the population from which it was drawn.

Results of this analysis are reported in Table II. No significant differences were found between response groups for age, income, size of hometown, education, innovativeness, or membership in formal organizations.

TABLE II

COMPARISON OF RESPONSE STATUS GROUPS ON SELECTED CHARACTERISTICS BY ANALYSIS OF VARIANCE

Source of Variance	SS	DF	MS	F	Significance Level
AGE[a]					
Main Effects					
Response Status	35.027	2	17.513	0.130	0.999
Residual	27,568.562	205	134.481		
Totals	27,603.590	207	133.351		
INCOME[a]					
Main Effects					
Response Status	6.390	2	3.195	0.415	0.999
Residual	1,576.351	205	7.690		
Totals	1,582.741	207	7.646		
SIZE OF HOMETOWN[a]					
Main Effects					
Response Status	5.139	2	2.569	0.582	0.999
Residual	904.517	205	4.412		
Totals	909.656	207	4.394		
EDUCATION[a]					
Main Effects					
Response Status	22.320	2	11.160	1.555	0.212
Residual	1,471.581	205	7.178		
Totals	1,493.901	207	7.217		

TABLE II--Continued

Source of Variance	SS	DF	MS	F	Significance Level
INNOVATIVENESS[a]					
Main Effects					
Response Status	2.186	2	1.093	0.313	0.999
Residual	779.530	223	3.496		
Totals	781.716	225	3.474		
MEMBERSHIP IN FORMAL ORGANIZATIONS[a]					
Main Effects					
Response Status	3.189	2	1.594	0.263	0.999
Residual	1,353.517	223	6.070		
Totals	1,356.706	225	6.030		

[a]By response status (first, second, and third mail outs).

Operational Definitions of Concepts

Innovativeness may be measured for a single item or for a number of innovations combined into an additive scale. When a multi-practice scale is used, innovativeness is taken to be a general behavior. The farmer who is early to try a new variety of hybrid seed corn is likely to also be ready to try a new type of weed spray, according to this reasoning. Advocates of multi-practice innovativeness scales include: Rogers, Havens, and Cartano (1962), Chattopadhyay and Pereek (1966), and Presser (1969). However, additive scales may mask important relationships between individual scale items and predictor variables. This is what Von Fleckenstein (1974:260) is referring to when he concludes that innovativeness scales may "conceal more than they reveal." He maintains that dealing with innovations one at a time may be more

informative for the study of factors related to innovativeness than the use of composite scales.

Individuals may be assigned innovativeness scores based on the time of adoption of the innovation being studied. Past research has shown that adopter distributions tend to follow a bell-shaped, normal curve over time (Rogers 1962:158). In order to assure a normal distribution for statistical analysis, sten scores on innovativeness may be assigned (Rogers, Havens, and Cartano 1962; Canfield 1951; Coates and Bertrand 1955). Those individuals in the first 2.3 percent to adopt are assigned a sten score of 9; lower scores are assigned to later adopters in percentages which transform the distribution of adoption data into a normal distribution. Those who adopted last or did not adopt the innovation have sten scores of 0. Thus, the earlier an individual adopts an innovation relative to other members of his social system, the higher his standardized sten score will be. Sten scores can easily be interpreted in terms of the five adopter categories used by Rogers (1962) since they too are based on areas under the normal curve:

Adopter Category	Sten Score
Innovators	9
Early Adopters	8,7
Early Majority	6,5
Late Majority	4,3
Laggards	2,1,0

Rogers (1962:162) shows the distribution of adopter categories on a normal curve by marking off standard deviations from the average time of adoption:

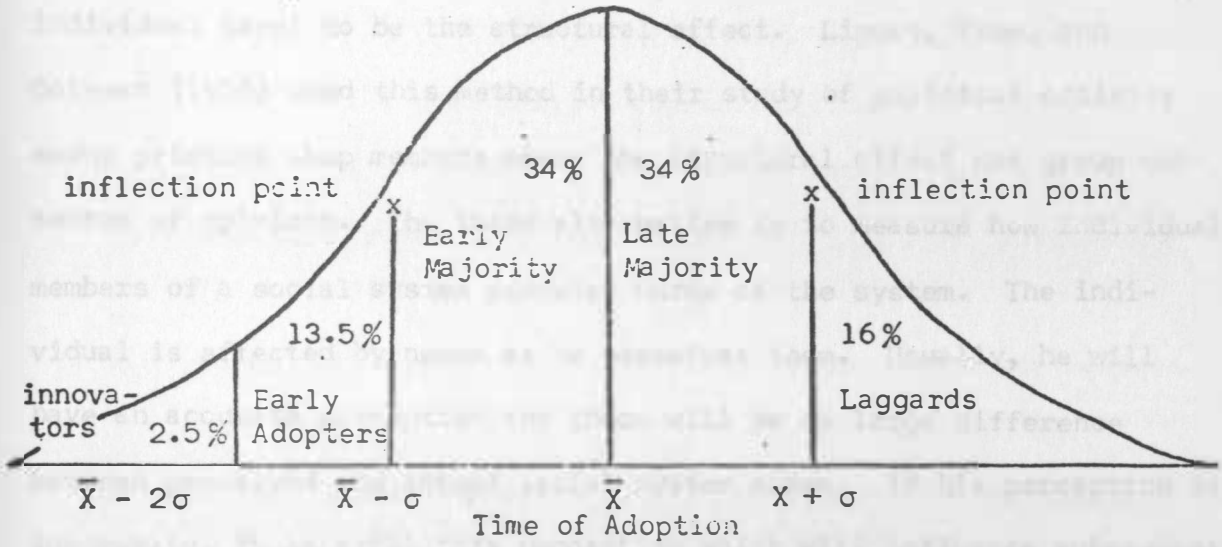

FIGURE III. THE ADOPTION CURVE.

Individual snowmobiler innovativeness is the dependent variable (Y) in this study. It is measured in terms of a sten score determined by the year in which the individual first purchased a snowmobile. Scores range from nine (earliest to purchase a snowmobile) to one (latest snowmobile buyers).

Structural effects have been defined in several ways. The structural effect may be taken as the average of attributes of members of the social system. Blau (1960) in his three-step method for determining structural effects uses this approach. This is reductionist in assuming that the whole is nothing more than the sum of its parts.

There are also practical difficulties of measurement since obtaining a reliable average requires extensive sampling of each community, group, or system involved in a study. A second technique avoids reductionism by selecting a systemic attribute which has no counterpart at the individual level to be the structural effect. Lipset, Trow, and Coleman (1956) used this method in their study of political activity among printing shop members where the structural effect was group consensus of opinions. The third alternative is to measure how individual members of a social system perceive norms of the system. The individual is affected by norms as he perceives them. Usually, he will have an accurate perception and there will be no large difference between perceived and actual social system norms. If his perception is inaccurate, it is still this perception which will influence subsequent behavior. This approach allows the individual to be the unit of analysis rather than the more difficult to handle unit of the whole social system. If perceived norms differ little from actual norms on innovativeness, the systemic attribute will be adequately reflected.

The independent variable (X_0) which measures structural effect is perceived community norm on recreational innovativeness. Respondents were asked to reply on a five-point Likert type scale from "strongly agree" (scored 5) to "strongly disagree" (scored 1) in reply to the statement, "In this community most recreational enthusiasts favor new recreational ideas and products."

Individual effects concepts are operationalized as 16 variables (X_1 through X_{16}). For clarity of presentation, each concept will be

followed by the way or ways it is to be measured. For a detailed description of the concepts themselves, refer to the "Concepts" section which begins on page 22.

Perceived socialization is operationalized as:

X_1 Perceived parental socialization for appreciating the out-doors. "Did your parents consciously (intentionally) try to get you to appreciate the out-of-doors?" Alternative responses were: "No" (1), "Sometimes" (2), or "Frequently" (3).

X_2 Number of winter recreational activities engaged in between ages 12 and 17. Five winter activities contained in Yoesting and Burkhead's (1971) scale of 45 outdoor recreational activities comprise this scale. They are as follows: ice skating; sliding, sledding, toboganning; ice fishing; snowmobiling; and snow skiing. Respondents were asked to indicate whether they had participated in each activity "frequently" or "occasionally" (scored 1) or "no" (scored 0). The composite score for all activities is X_2.

X_{10} Perceived parental socialization for innovativeness. "Did your parents consciously (intentionally) try to get you to appreciate trying new things and ideas?" "No" (1), "Sometimes" (2), or "Frequently" (3).

Values which have been shown to be related to innovativeness and which appear in this study are leisure orientation and traditionalism.

X_3 Leisure orientation. This scale consists of 21 items based on Goldstein and Eichhorn (1961) and Burdge (1961). The items express belief in the desirability and importance of leisure. Some items deal with leisure versus work ethic orientation. Items were scored on a five-point Likert scale from "strongly agree" (5) to "strongly disagree" (1). (See Appendix II).

X_{11} Traditionalism. This scale consists of seven items expressing belief in the need to maintain traditional ways rather than try new ones. (See Appendix III).

Self-concept influences individual behavior. For purposes of this study, this concept is operationalized as:

X_{12} Self-concept regarding innovativeness. "In general, in which of these categories would you consider yourself to be in regard to new things? I like to try anything new which comes along (4). I like to try new ideas but wait until I am quite familiar with them (3). I like to try new ideas only after I have discussed them with other people and have seen them demonstrated (2). I just don't like to try new ideas (1)."

Perceived opportunity for use of an innovation influences the adoption behavior of potential innovators. For snowmobilers, this concept is operationalized as:

X_4 Perceived opportunity for leisure. "When I want them, opportunities for recreation and leisure . . . always

present (4), sometimes present (3), rarely present (2), never present (1)."

X_5 Perceived adequacy of snow for snowmobiling. "Do you feel there is usually enough snow in your area for snowmobiling? "Yes" (1), "No" (0).

Cosmopoliteness, the degree to which one's orientation is focused outside of a particular social system, is measured as:

X_6 Reading of outdoor recreation-oriented magazines. This is a regular reading of any outdoor recreation-orientated magazine. "Yes" (1), "No" (0).

Formal social participation involves not only the number of groups to which one belongs, but also the type of group and the level of participation maintained in these groups. These aspects of the concept are operationalized in three variables:

X_7 Membership in outdoor recreation oriented groups. "Are you a member of any outdoor recreation oriented group?" "Yes" (1), "No" (0).

X_8 Membership in formal organizations. "To how many formal organizations do you presently belong; such as church, lodge, farmer's cooperative, service organizations, and so on?" Score is total number indicated.

X_9 Level of participation in formal organizations. "In the organizations to which you presently belong, which of the following best describes your general participation? Am not active (1). Am a reliable member but do not wish to

hold a position of importance (2). Am a reliable member and would like to hold an office, but have never had one (3). Have held at least one important office (4). Have held several important offices (5)."

Sociodemographic individual effects include age, education, size of hometown, and social status (operationalized here as income).

X_{13} Age. Years of age at the time of the survey.

X_{14} Education. Years of formal education from one to 17, or "greater than 17" (scored as 18).

X_{15} Size of hometown. "I live on a farm (1), Less than 1,000 (2), 1,000-2,500 (3), 2,500-10,000 (4), 10,000-25,000 (5), 25,000-50,000 (6), 50,000+ (7)."

X_{16} Income. Income is used as an indication of social status. This is family income before taxes for 1973. "Under $1,000 (1), $1,000-2,999 (2), $3,000-4,999 (3), . . . $19,000-20,999 (11), $21,000-29,999 (12), $30,000+ (13)." It should be noted that these categories are similar (although not identical) to the unequal intervals used by the U. S. Census of Population (1970) in reporting income wherein the higher incomes are grouped into larger intervals.

CHAPTER V

ANALYSIS OF DATA

This chapter reports statistical findings related to the three objectives of the study. In the first section, Objective Two is analyzed through the use of multiple or partial correlation analysis. Findings are reported on the relationship between community norm on recreational innovativeness (structural effect) and subsequent snowmobiler innovativeness. The second section reports results of multiple regression analysis which relate to all three objectives of the study. It shows the contribution of variations in (1) sociopsychological and sociodemographic characteristics of individual snowmobilers (individual effects), (2) community norm on innovativeness (structural effects), and (3) a combination of all these factors as suggested by adoption theory to statistical explanation of snowmobiler innovativeness sten scores. The 0.05 level of significance is used.

Statistical Test--Partial Correlation Analysis

Flinn (1970) used partial correlation to examine structural effects of perceived community norms on individual innovativeness while controlling for individual effects. Partial correlation provides a single measure of association between two variables while adjusting for the effects of one or more other variables (Nie et al. 1975; Blalock 1972). It performs the same function as cross tabulation of variables without the problems of low-cell frequencies. Partial correlation assumes that the effect of the control variables is linear. If this

assumption is met, the statistical control of partial correlation may be substituted for physical manipulation of the raw data.

The formula for partial correlation coefficients is:

$$r_{ij \cdot k} = \frac{r_{ij} - (r_{ik})(r_{jk})}{\sqrt{1 - r_{ik}^2}\sqrt{1 - r_{jk}^2}}$$

where:

k = control variable
i = independent variable
j = dependent variable

To compute higher ordered partial correlations controlling for more than one variable, the simple correlation coefficients are replaced by n-th order partial coefficients so that each higher order partial is computed from the previous one.

Extending Flinn's Study

Flinn (1970) examined the partial correlation between perceived community norm on innovativeness and individual innovativeness scores while controlling truck growers' attitudes towards innovators, age, education, social status, and acres in truck crops. The analogous variables used in this study on snowmobiler innovativeness are: the independent variable X_0, perceived community norm on innovativeness; the dependent variable Y, individual innovativeness scores; and the control variables X_{12}, self-concept regarding innovativeness; X_{13}, age; X_{14}, education; X_{16}, income (as a measure of social status); and X_4, perceived opportunity for leisure (similar to acres in truck crops because both measure potential for use of the innovation).

Anson and Bohlen's (1973) suggestion of the need to control relevant individual effects can be incorporated by controlling variables X_1 through X_{10}, and X_{12} through X_{16} with a fifteenth-order partial correlation coefficient. The added control variables include: X_1, perceived parental socialization for appreciating the outdoors; X_2, number of winter recreational activities engaged in between ages 12 and 17; X_3, leisure orientation; X_5, perceived adequacy of snow for snowmobiling; X_6, reading of outdoor recreation-oriented magazines (cosmopoliteness); X_7, membership in outdoor recreation-oriented groups; X_8, membership in formal organizations; X_9, level of participation in formal organizations; X_{10}, perceived parental socialization for innovativeness; and X_{15}, size of hometown. Variable X_{11}, traditionalism, was dropped from the study due to low-scale reliability (see Appendix III).

Null Hypothesis

The above procedure is used to test the null hypothesis that: There is no significant relationship between variation in community norm on innovativeness as perceived by the individual (X_0) and variation in individual innovativeness scores (Y).

Statistical Findings

Results of the zero-order and partial correlations are reported in Table III. The zero-order correlation between perceived community norm (X_0) and innovativeness (Y) is not statistically significant

(r = 0.0775). The relationship between the structural effect and innovativeness tends to decrease as controls are applied for individual effects variables. When all 15 individual effects are controlled through a fifteenth-order partial correlation, the remaining correlation is r = 0.0296. (For a more detailed analysis of the partial correlation results, see Appendix V).

TABLE III

COMPARISON OF ZERO-ORDER AND PARTIAL-ORDER CORRELATION COEFFICIENTS OF PERCEIVED COMMUNITY NORM WITH INNOVATIVENESS

Independent Variable	Dependent Variable	Control Variable	r	Level of Significance
Zero-order correlation perceived community norm	Innovativeness	--	0.0775	0.124
First-order correlation perception of community innovativeness norm	Innovativeness	Self-Concept	0.0776	0.124
Second-order	Innovativeness	Age	0.0916	0.087
Third-order	Innovativeness	Education	0.0912	0.089
Fourth-order	Innovativensss	Income	0.0847	0.121
Fifth-order	Innovativeness	Perceived Opportunity for Leisure	0.0829	0.127
Fifteenth-order	Innovativeness	X_1 through X_{10} X_{12} through X_{16}	0.0296	0.370

The null hypothesis of no relationship between variation in community norm on innovativeness as perceived by the individual (X_0) and individual snowmobiler innovativeness scores (Y) cannot be rejected at the 0.05 level of significance. There is, however, a small but not significant relationship in the expected direction.

Statistical Test--Multiple Regression Analysis

The prediction of variation in individual innovativeness scores by individual and structural effects variables is examined through the use of multiple regression. Multiple regression analyzes the collective and separate contributions of two or more independent variables to the variation in the dependent variable (Kerlinger and Pedhazur 1973:3). Partial correlation can also give an overall R^2. The difference between the two techniques is that while partial correlation coefficients are standardized and cannot be larger than one, regression coefficients reflect the original units of the variables.

The general form of the predictive regression equation is:

$$Y' = A + B_1X_1 + B_2X_2 + \cdots B_kX_k$$

where

Y' = predicted value for Y
A = regression intercept (a constant)
B_i = regression coefficient
X = independent variable

(Kim and Kahout 1975:328). The regression coefficient shows the change in the dependent variable which occurs with a unit change in the independent variable while holding the other independent variables

constant. The predictive power of all independent variables taken together is indicated by the coefficient of determination, R^2. The association between variables was tested at the 0.05 level of significance.

Independent Variables

The independent variables are of three types: structural effects, individual effects related to recreation, and other individual effects drawn from adoption-diffusion literature. The independent variables are:

Structural effects:

X_0 perceived community norm on innovativeness.

Individual effects related to recreation:

X_1 perceived parental socialization for appreciating the outdoors,

X_2 number of winter recreational activities engaged in between ages 12 and 17,

X_3 leisure orientation,

X_4 perceived opportunity for leisure,

X_5 perceived adequacy of snow for snowmobiling,

X_6 reading of outdoor recreation-oriented magazines (cosmopoliteness), and

X_7 membership in outdoor recreation-oriented groups.

Individual effects--Other:

X_8 membership in formal organizations,

X_9 level of participation in formal organizations,

X_{10} perceived parental socialization for innovativeness,

X_{11} traditionalism,

X_{12} self-concept regarding innovativeness,

X_{13} age,

X_{14} education,

X_{15} size of hometown, and

X_{16} income.

Variable X_{11} was dropped from the analysis because the seven-item traditionalism scale lacked reliability (Cronbach's Coefficient Alpha = 0.450).

Dependent Variable

The dependent variable (Y) was individual snowmobiler innovativeness measured by the (Rogers, Havens and Cartano 1962) sten score technique.

Null Hypotheses

Null hypotheses were formulated so that the statistical significance of the association hypothesized between the independent variables and the dependent variable could be tested. The null hypotheses were as follows:

1. There is no significant relationship between community norm on innovativeness as perceived by the individual (X_0) and

individual innovativeness scores (Y) when controlling for individual effects variables X_1 through X_{10} through X_{16}.

2. There is no significant relationship between individual effects variables (X_1 through X_7) related to recreation and individual innovativeness scores (Y) when controlling for the structural effects variable (X_0) and other individual effects variables (X_8 through X_{10} and X_{12} through X_{16}.
3. There is no significant relationship between the other individual effects variables (X_8, X_9, X_{10}, X_{12} through X_{16}) and individual innovativeness scores (Y) when controlling for structural effects (X_0) and individual effects related to recreation (X_1 through X_7).
4. There is no significant relationship between all structural and individual effects variables (X_0, X_1 through X_{10} and X_{12} through X_{16}) taken together and individual innovativeness scores (Y).

Statistical Findings

The data in Table IV represents linear regression analysis of snowmobiler innovativeness sten scores.

There was no significant association between independent variable X_0, perceived community norm on innovativeness, and the dependent variable Y, individual innovativeness scores. Therefore, the first null hypothesis was not rejected.

TABLE IV

MULTIPLE REGRESSION ANALYSIS OF STRUCTURAL AND INDIVIDUAL EFFECTS AS PREDICTORS OF SNOWMOBILER INNOVATIVENESS

	Independent Variable	r	b	$S_{\bar{X}}$	β	F
STRUCTURAL EFFECTS						
X_0	Perceived community norm on innovativeness	0.03216	0.06175	0.18514	0.02725	0.111
INDIVIDUAL EFFECTS RELATED TO RECREATION						
X_1	Perceived parental socialization for appreciating the outdoors	0.06315	0.18437	0.23536	0.07709	0.614
X_2	Number of winter recreational activities engaged in between ages 12 and 17	0.18435**	0.10843	0.12421	0.07560	0.762
X_3	Leisure orientation	0.04398	0.03090	0.02051	0.13973	2.270**
X_4	Perceived opportunity for leisure	0.17059*	0.42019	0.21422	0.16378	3.847**
X_5	Perceived adequacy of snow for snowmobiling	-0.03925	-0.32934	0.29001	-0.09449	1.290
X_6	Reading of outdoor recreation oriented magazines (cosmo-politeness)	0.12785	0.15565	0.30349	0.04384	0.263
X_7	Membership in outdoor recreation oriented groups	0.08145	0.14851	0.32227	0.04061	0.212

TABLE IV--Continued

	Independent Variable	r	b	$S_{\bar{X}}$	β	F
INDIVIDUAL EFFECTS--OTHER						
X_8	Membership in formal organizations	0.19242**	0.10646	0.07856	0.12476	1.836*
X_9	Level of participation in formal organizations	0.05474	-0.04225	0.12176	-0.03379	0.120
X_{10}	Perceived parental socialization for innovativeness	-0.01850	0.00131	0.27859	0.00047	0.000
X_{12}	Self-concept regarding innovativeness	0.03297	0.03883	0.22453	0.1484	0.030
X_{13}	Age	0.32136**	0.06868	0.01669	0.38135	16.929**
X_{14}	Education	-0.13350*	-0.04819	0.05613	-0.07363	0.737
X_{15}	Size of hometown	-0.08764	-0.10899	0.07062	-0.13365	2.382**
X_{16}	Income	-0.00140	-0.06715	0.05930	-0.10351	1.282

*$P \leq 0.05$
**$P \leq 0.01$

For all independent variables combined,
$R^2 = 0.23326$; $F = 2.41483$; $P \leq 0.01$
$\hat{R}^2 = 0.13666$

Variation in two independent variables related to recreation, X_3 and X_4, contributed significantly to the explanation of variability in individual innovativeness scores (Y). The F ratio indicates that the null hypothesis must be rejected for these variables. However, the statement of no association between independent variables X_1, X_2, X_5, X_6, and X_7 related to recreation and the dependent variable Y was accepted.

The effects of other individual variables X_8, X_{13}, and X_{15} contributed significantly to the variance in individual innovativeness scores. The third null hypothesis was rejected for these variables. No significant association was found between variations in other individual effects variables X_9, X_{10}, X_{12}, X_{14}, and X_{16} and variation in Y. The third null hypothesis of no association between these independent variables and the dependent variable was not rejected on the basis of the data.

All 16 variables in concert explain 23 percent ($R^2 = 0.233$) of the total variance in Y. This is significant at the 0.01 level of probability. The fourth null hypothesis, that the set of independent variables taken together does not explain the variance of the dependent variable, is rejected.

Stated descriptively, the findings are that higher snowmobile innovativeness is associated with the following:

X_3 high leisure orientation,

X_4 greater perceived opportunity for leisure,

X_8 membership in more formal organizations,

X_{13} older age, and

X_{15} smaller size of hometown.

The structural effects variable and the 15 individual effects variables taken together explain a significant portion of the variance in snowmobiler innovativeness scores.

Independent variables which were not observed to relate to individual innovativeness are the following:

X_0 perceived community norm on innovativeness,

X_1 perceived parental socialization for appreciating the outdoors,

X_2 number of winter recreational activities engaged in between ages 12 and 17,

X_5 perceived adequacy of snow for snowmobiling.

X_6 reading of outdoor recreation oriented magazines (cosmopoliteness),

X_7 membership in outdoor recreation oriented groups,

X_9 level of participation in formal organizations,

X_{10} perceived parental socialization for innovativeness,

X_{12} self-concept regarding innovativeness,

X_{14} education, and

X_{16} income.

CHAPTER VI

SUMMARY, FINDINGS, IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

Summary of the Research Problem, Objectives, and Design

The study of social change is a major focus of sociology. Theorists have attempted to explain and predict the course of social change with varying degrees of success. The adoption-diffusion model of Everett Rogers is one of the more recent attempts in this area. It explains innovativeness as a decision-making process which is influenced by perceived attributes of the innovation as well as by characteristics of the adopter and of his social situation. The model, which was originally used to explain agricultural innovativeness, has been supported and refined through numerous empirical studies. However, very few attempts have been made to apply this model to an explanation of recreational innovativeness. Also, relatively few studies have dealt with the effects of characteristics of the social system (structural effects) on the innovative behavior of individuals. Therefore, it is theoretically significant to ask the question: Do individual and/or structural effects as suggested by the adoption-diffusion model explain variations in snowmobiler innovativeness?

The specific objectives of the study were to determine:

1. Which, if any sociopsychological and sociodemographic individual characteristics explain snowmobiler innovativeness?

2. Whether community norms contribute to explaining variations in snowmobiler innovativeness when individual characteristics of innovators are partialed out or controlled.

3. Whether the general contours of the adoption-diffusion model may be extended to the area of recreation and leisure.

Chapter II consisted of a review of the literature relevant to this study. The concept of structural effects was clarified by an examination of its use in various sociological settings. Ways the concept has been measured were discussed in some detail, since operationalization of structural effects has proven to be a difficult task. The adoption-diffusion model was then presented. A survey of previous adoption studies revealed that few had dealt with recreational innovativeness, and none had examined the purchase of the snowmobile as a recreational innovation. Finally, the review of literature summarized a number of studies which had used community norm on innovativeness as a structural effect to explain variations in the innovative behavior of individuals. William Flinn's (1970) article, which used partial correlation to hold individual effects constant while examining the relationship between community norm and innovativeness, was employed as a methodological guide and a take-off point for this study.

In Chapter III, basic concepts were defined. These included: innovation, innovativeness, social system, structural effects, norms, individual effects, perception, perceived opportunity for use, cosmopoliteness, formal social participation, values, traditionalism, leisure orientation, socialization, and self-concept. The

relationships between concepts were traced out in the theoretical framework. Society is shown to be made up of three systems: cultural, social, and personality. The process of institutionalization transforms values of the cultural system into social institutions which function to maintain values. Other components of the social system are norms, roles, definitions of goals, and the appropriate means of attaining them. Through the process of socialization, values, role definitions, and norms are internalized in the personality of individuals. The theory of Symbolic Interactionism was used to explain the way in which socialization occurs. Given this theoretical framework which combines Parsons' social systems theory with Symbolic Interactionists' treatment of the individual, all the elements present in the situations of real life are given. The Social Act (Parsons and Shils 1952) explains how factors impinge on the individual actor in a given situation. To explain innovation as a social act, Action Theory indicates one must consider the characteristics of the actor, his situation, his values, and the norms of the social system.

Elements of the Social Act which were hypothesized to influence recreational innovativeness in relation to the snowmobile are of three types: structural effects, individual effects related to recreation, and other individual effects suggested by the adoption-diffusion literature. Variables hypothesized to explain variation in innovativeness were: (1) structural effects--perceived community norm on recreational innovativeness; (2) individual effects related to recreation--perceived parental socialization for appreciating the outdoors,

number of winter recreational activities engaged in between ages 12 and 17, leisure orientation, perceived opportunity for leisure, perceived adequacy of snow for snowmobiling, reading of outdoor recreation-oriented magazines (cosmopoliteness), membership in outdoor recreation-oriented groups; and (3) other individual effects suggested by the literature on adoption-diffusion--membership in formal organizations, level of participation in formal organizations, perceived parental socialization for innovativeness, traditionalism, self-concept regarding innovativeness, age, education, size of hometown, and income.

A mailed questionnaire was used to contact a random sample of 402 of the 14,800 registered snowmobile owners in South Dakota for 1974. Questionnaires were returned by 239 respondents giving a 59.5 percent rate of return.

Statistical findings determining the factors related to innovativeness were presented in Chapter V. To fulfill Objective Two of the study, partial correlation analysis was used to examine the relationship between community norm and innovativeness while controlling for individual effects. All three Objectives were met in the second section of this chapter through the use of multiple regression. The contributions of structural effects and individual effects to explaining differences in innovativeness were measured. The overall applicability of the adoption-diffusion model to explain innovativeness in the purchase of the snowmobile as a recreational innovation was

indicated by the ability of all factors taken together to statistically explain innovativeness sten scores.

Major Findings

The major findings related to the three objectives of this study were:

Objective One: Major Findings

Objective One was to determine which, if any, sociopsychological and sociodemographic individual characteristics explain variations in snowmobiler innovativeness.

Major Findings

Major findings reported in Chapter V which are related to Objective One were:

Two of the seven variables which represent individual effects related to recreation were found to contribute significantly to the explanation of the variability observed in snowmobiler innovativeness. These variables were:

1. Leisure orientation--More innovative individuals expressed a stronger leisure orientation than did less innovative individuals.

2. Perceived opportunity for leisure--Individuals who were more innovative felt that they had more opportunities to indulge in leisure than did less innovative individuals.

3. Individual effect variables related to recreation which were not significantly associated with variations observed in snowmobiler innovativeness were: perceived parental socialization for appreciating the outdoors, number of winter recreational activities engaged in

between ages 12 and 17, perceived adequacy of snow for snowmobiling, reading of outdoor recreation-oriented magazines (cosmopoliteness), and membership in outdoor recreation-oriented groups.

Three of the eight variables which represent other types of individual effects suggested by adoption-diffusion theory were found to contribute significantly to the prediction of snowmobiler innovativeness. These independent variables were:

4. Membership in formal organizations--Those who were more innovative in purchasing snowmobiles tended to belong to more formal organizations than did less innovative snowmobile buyers.

5. Age--Older people were more innovative in relation to snowmobiles than were younger people.

6. Size of hometown--Living on a farm or in a small town was positively associated with snowmobiler innovativeness.

7. Other individual effect variables which were not significantly related to snowmobiler innovativeness were: perceived parental socialization for innovativeness, self-concept regarding innovativeness, education, and income.

Objective Two: Major Findings

The second objective of the study was to ascertain whether or not community norms contribute to explaining variations in snowmobiler innovativeness when individual characteristics of innovators are controlled.

Major Findings

Findings related to Objective Two were:

1. The zero-order correlation between variations in community norms and snowmobiler innovativeness was not significant at the 0.05 level.

2. Community norm on innovativeness and snowmobiler innovativeness were not significantly related when the 15 individual effects variables examined in the study were held constant.

3. The independent variable community norm did not explain a significant portion of the variance in individual innovativeness scores of snowmobile purchasers.

Objective Three: Major Findings

Objective Three of the study was to determine whether the general contours of the adoption-diffusion model may be extended to the area of recreation and leisure.

Major Findings

Findings related to Objective Three were:

1. A combination of (a) the variable representing the presence or absence of structural effect, (b) the seven individual effects related to recreation, and (c) the eight other individual effects variables suggested by adoption-diffusion theory explained a significant portion of the variance in innovative purchasing of snowmobiles ($R^2 = 0.23326$; $P \leq 0.01$). This result indicates that these variables together explain almost one-quarter of the total variance in sten scores.

Implications

Implications based on the findings of this study are:

1. Adoption-diffusion theory is applicable in the sphere of recreational innovation. However, the proportion of variance explained by all variables taken together was not great. This suggests a need for further refinement of the measures used and a need to look for additional ways to explain innovativeness.

2. Since perceived community norm on recreational innovativeness was not significantly related to snowmobiler innovativeness, it may be that people act more independently in recreational decision-making than in other areas of life. Recreational purchases may tend to be relatively spontaneous or even impulsive as compared to the adoption of work-related items.

3. There is a question whether it is justifiable to draw conclusions about the presence or absence of structural influences on individual behavior from a study of this type. A theoretically correct conceptualization of group norms is not easily achieved. Measurement of structural variables must be confined to the level of the social system where they occur. A structural effect has an existence outside the consciousness of the individual as a social fact in its own right. For structural variables which have no counterpart at the individual level, such as consensus or population density, the confusion of levels of analysis has less likelihood of occurring than in a case such as this one.

In the present study, the independent variable is the community norm on innovativeness as perceived by the individual. The norm itself, which is the structural effect, has not been directly measured. This is not to say that perceived community norm has no structural implications. The individual's only knowledge of reality comes through his perceptions. Structural effects influence individuals when they are perceived in situations of social interaction. It is for this reason that Campbell and Alexander (1965) analyze structural effects as a two-step process. This study of snowmobiler innovativeness deals only with the second step of the process, the influence of perceptions of the community norm on the behavior of the individual. The orientation in such an analysis tends to be more psychological than sociological.

Durkheim (1895:xlvi) believed that the study of social facts would be more informative than the examination of individual perceptions. "The important thing to know is not the way in which a certain thinker individually conceives a certain institution but the group's conception of it; this conception alone is socially significant."

The group norm is a holistic concept which is greater than the combination of individual perceptions of the norm, and which is, in fact, the cause of these perceptions. Community norm, as a sociological construct, cannot be understood through an averaging of the innovative behavior or attitudes of the individuals who belong to a community. Durkheim (1897:317) maintained that "it is a profound mistake to confuse the collective type of a society, as is so often done, with

the average type of its individual members." His suggestion was that "the proper way to measure any element of a collective type is not to measure its magnitude within individual consciences and to take the average of them all. Rather, it is their sum that must be taken. Even this method of evaluation would be much below reality for this would give us only the social sentiment reduced by all its loses through individuation" (Durkheim 1897:319). How can this be done for group norms? If a norm has been codified as a law or enshrined in an institution, it is readily visible. The community norm on innovativeness is not this clear cut or formalized. Yet the norm on innovativeness is nonetheless "real" for all this. A definite social pressure or atmosphere may pervade a community and influence community members through their perceptions of it. Perhaps a more qualitative approach could capture the norm in its existential state. One suggestion might be to assemble a panel of experts such as community leaders, recreational professionals, and recreation equipment dealers and ask them to rate the norm of the community towards recreational innovativeness as compared with other communities in the area. If, in this or some other way, a direct measure of community sentiment could be obtained, this independent variable would be a holistic, truly structural effect. In moving to the community as the unit of analysis, a more appropriate dependent variable would be the rate of adoption of innovations in the community. This would be the explanation of one social fact by another social fact. It would be in the realm of a purely sociological, rather than a psychological, approach.

4. One practical implication of the present study is of interest for snowmobile dealers. Results of the study suggest that when the snowmobile is being introduced into a community, the target population of potential innovators tends to be older people. It may be that as individuals pass the age when they can engage in strenuous sports, they search for new kinds of recreation to replace these activities.

5. Since snowmobile innovativeness is associated with small town and rural residence, a factor limiting its early adoption may have been the lack of trail facilities in urban areas. Snowmobile participation studies have shown that lack of trails near cities reduces the snowmobiling activities of owners (Chubb 1971). The present research confirms the significance of size of hometown as an influence on innovativeness. The reason why this occurs can only be surmised. Inadequate trails is one possible answer, but occupational differences or other factors could also be at work here.

6. This study shows that recreational innovativeness is positively associated with leisure orientation. This finding suggests that it will be difficult to persuade work ethic oriented people to try recreational innovations like the snowmobile. Perhaps the best selling approach to reach these individuals would stress the practical aspects of the innovation such as transportation in blizzards and use for feeding livestock.

Limitations

Limitations of this study arise from problems due to: the difficulty of distinguishing between owners and users, the need to assume

late respondents are similar to nonrespondents in evaluating the sample returns, lack of a nonadopter comparison group, "slippage" in the time frame, and questions about the validity of using perceived measures for structural effects.

One problem for snowmobile studies is distinguishing between owners and users (Chubb 1971). Owners are more easily identified than users since their names appear on vehicle registration lists (with the exception of farmers and others who use their snowmobiles only on their own land and are not required to register the vehicles). In addition to the owner, other family members may use the snowmobile. Snowmobiles tend to be registered in the husband's name and could result in underrepresentation of women users. Only 7.6 percent of the 239 respondents were female. This essentially controls for sex, but makes application of the findings to women problematic. Children, likewise, are usually not owners of snowmobiles. Ideally, in an adoption study, the individual who buys an innovation will also be the one who uses it. If a choice must be made between owners and users, owners are probably of more interest. They are the ones who have made the decision to buy a snowmobile based on their own interests and sources of information (which may include inputs from other family members).

The response rate for the mailed questionnaire was 59.5 percent. This would be a limitation if respondents and nonrespondents differed on characteristics of interest to the study. An attempt to secure some assessment of this was used by comparing late respondents and early

respondents. The assumption was made that those who needed prompting to respond were similar to those who refused to respond. No significant difference was found between response category groups.

Another problem is the lack of a nonadopted comparison group. The sample consists entirely of snowmobile owners. Innovativeness is defined as relative earliness of purchase as compared to other groups. Yet, in a sense, all snowmobile owners have been innovative. The rapid growth of the snowmobile industry in recent years shows that this innovation has not yet saturated the market. It may be that after the adoption curve stabilizes, all people who bought snowmobiles by 1974 will fall into the categories of either innovators or early adopters. If owners could be compared to nonowners, some striking differences might appear. By looking only at differences between early and late adopters, this study may face the problem of a group that is too homogeneous.

One possibly serious limitation is "slippage" in the time frame. This is a problem for all post factum studies to some extent. The independent variables should be ascertained for the time immediately preceding purchase of the innovation. For example, if a respondent lived on a farm when he bought his first snowmobile in 1964, this place of residence may have contributed to his decision. If he moved to a town of 50,000 a few years later, his answer to the residence question would reflect this new place where he lived in 1974, the time of the study. It is difficult to ask the respondents to answer all questions for the year in which they first purchased a snowmobile. For some

people, this would go back to 1957 which would be hard to remember. For others, it would be only a short time since purchase. There is, however, one variable whose state at the time of purchase can be determined through a simple mathematical calculation. This variable is age. Appendix VI shows the effect of substituting the corrected value for age in both the partial correlation and multiple regression analyses. Although other independent variables remain uncorrected for time difference, the analysis does provide some indication of the seriousness of this possible limitation. While the variables may have changed in time for some respondents, the overall effect is not great since changes tend to randomly cancel out. Previous adoption studies based on multiple practice scales could not avoid the time frame "slippage" problem, but have still provided useful results.

A final question may be raised about the way in which structural effects were measured. Following Flinn's (1970) suggestion, perception of community norm regarding innovativeness was used as the structural effect. As was argued in the preceding section on "Implications", perceived norm is measured at the individual level and is not a direct structural measure.

Recommendations

In this section, a number of recommendations for further research are offered.

In any future study of this type, a group of nonacceptors should be included in addition to the group of acceptors for comparison purposes. The nonacceptor group would be composed of individuals who had

been given the opportunity to accept the snowmobile, but did not. For example, a sample might be drawn from visitors to snowmobile dealers or recipients of snowmobile advertising literature who did not buy snowmobiles.

To obtain a more representative sample of snowmobile owners, it is suggested that an attempt be made to include owners of nonregistered vehicles. Perhaps dealers could provide lists of their buyers which could be checked against registration lists to locate these individuals.

Since selected variables were somewhat effective in explaining variation in snowmobiler innovativeness, it is suggested that exploratory, qualitative studies be done to better determine additional factors which influence decision-making with regard to recreational innovativeness. This might serve to increase the explanatory power of the adoption model which only succeeded in explaining about one-fourth of the variance in innovativeness sten scores in this study ($R^2 = 0.233$).

The operationalization of structural effects which relied on perception of the community norm by individuals needs to be changed. Some sort of direct, structural level measurement of community norm is needed. This will be a difficult problem to solve in future studies since holistic qualities must be captured which go beyond any averaging of individual attitudes or behavior. Use of a panel of experts to rate the group norm is suggested as one possibility.

The adoption-diffusion perspective should be tested on other types of recreational innovations. These would include: inexpensive items

(for example, the frisbee), equipment which requires considerable skill and training to use, and innovative recreational ideas which require no special equipment (such as jogging).

There should be more use of sociological theories of various types to explain recreational behavior. For example, deviance theories could be applied to the study of snowmobiling in restricted areas or failure to register vehicles used on public land.

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APPENDIX I

THE QUESTIONNAIRE

SOUTH DAKOTA SNOWMOBILER SURVEY

Project Number 672-

This survey should be completed by the snowmobile owner in the household to whom the envelope is addressed. Please fill in blanks with the information requested, or check the categories for each of the items, which most closely apply.

1. What is the primary use of your snowmobile?

___(a) Pleasure ___(c) Work ___(e) other (specify)

___(b) Sports (fishing, etc.) ___(d) Racing _____

2. Where do you presently use your snowmobile most? (Check one)

___(a) your own property ___(f) state forests

___(b) other private property ___(g) federal lands

___(c) city parks or property ___(h) lakes and rivers

___(d) state parks ___(i) other (describe)_____

___(e) county property

3. What, in your opinion, are the ideal geographical and weather conditions for snowmobiling?

a._____ c._____

b._____ d._____

4. Do you feel there is usually enough snow in your area for snowmobiling?

___Yes ___No

5. The snowmobile facilities (other than your own property) in this area can be described as

___Very Adequate ___Adequate ___Marginal ___Inadequate ___Very Inadequate

6. Please estimate the total number of visits, you and other members of this household have had with public snowmobile facilities during the past year. _____

7. What are the things which limit your use of outdoor recreational facilities in South Dakota?_____

_____

8. Is there a need for more public trails in your area? ___Yes ___No

9. What are the most important things a person should think about in deciding to visit a particular snowmobiling area?_____

_____

10. How many years out of the past five years, have you taken vacations within the state of South Dakota? (Vacation is defined as 3 nights or more away from home)

_____5 out of 5 _____3 out of 5 _____1 out of 5

_____4 out of 5 _____2 out of 5 _____0 out of 5

11. On the average, how many days of paid vacation do you receive each year?

_____days

12. When I want them, opportunities for recreation and leisure are

___Always Present ___Sometimes Present ___Rarely Present ___Never Present

13. What is the most distance (one way) you have traveled at any time during the past year to participate in or attend a snowmobile race or demonstration?

_____miles

14. How far are you willing to travel to snowmobile? _____miles

15. On the average, what percent (0 to 100%) of your total outdoor work and leisure time (when a snowmobile could be used) do you spend with your snowmobile? _____%

16. From the following list of outdoor recreation activities listed here and on pages 3&4, in which of these activities did you participate when you were 12 to 17? (Junior and Senior high school age)

ACTIVITY	Frequently	Occasionally	No
a. Bicycling			
b. Horseback riding			
c. Baseball-softball			

16. Continued

ACTIVITY	Frequently	Occasionally	No
d. Football			
e. Basketball			
f. Volleyball			
g. Badminton			
h. Swim-outdoor pool			
i. Swim-lake, river, pond			
j. Motor Bike-motorcycling			
k. Attend outdoor sports events			
l. Ice skating			
m. Sliding, sledding, tobogganing			
n. Target-trap shooting			
o. Hunting (small game)			
p. Hunting (big game)			
q. Hunting (water fowl)			
r. Fishing			
s. Ice fishing			
t. Hiking, walking for pleasure			
u. Nature walks			
v. Bird watching			
w. Nature photography			
x. Picking mushrooms, nuts, berries			
y. Driving for pleasure-sightseeing			
z. Family-small group picnics			
aa. Golf, regular			

16. Continued

ACTIVITY	Frequently	Occasionally	No
bb. Camp-wheeled vehicle			
cc. Power boat-ski			
dd. Snowmobiling			
ee. Sailing			
ff. Canoeing			
gg. Snow skiing			
hh. Miniature golf			
ii. Soccer			
jj. Tennis			
kk. Horseshoes			
ll. Mountain or rock climbing			
mm. Attending outdoor plays, concerts, etc.			
nn. Camping-tent			
oo. Group camping (youth camps, church groups, etc.)			
pp. Large group picnics			
qq. Archery			
rr. Gardening (flower or vegetable)			
ss. Other boating (rowboat, small motor, fishing, etc.)			
tt. Other (specify)			

17. Did your parents consciously (intentionally) try to get you to appreciate trying new things and ideas?

_____No _____Sometimes _____Frequently

18. Did your parents consciously (intentionally) try to get you to appreciate the out of doors?

_____No _____Sometimes _____Frequently

19. Do you read any outdoor recreation oriented magazines regularly?

____Yes ____No

(If yes) which ones?_____

_____

20. Are you a member of any outdoor recreation oriented groups?

____Yes ____No

(If yes) which ones?_____

_____

21. In general, how often do other individuals come to you for advice on outdoor recreation matters?

__Never __Rarely __Occasionally __Quite often __Very often

22. If your best group of friends thought that you were the first person in the area to purchase a snowmobile, how do you think they would react?

____Would approve ____Would disapprove but remain friends

____Would not care ____Would disapprove — stop being friends

23. If your community thought that you were the first person in the area to purchase a snowmobile, how do you think they would react?

____Would approve ____Would disapprove but remain friends

____Would not care ____Would disapprove -- stop being friends

24. How would you describe the outdoor recreational activity of the community in which you live?

__Very active __Active __Somewhat Active __Inactive __Very inactive

25. Which of the following best describes your feelings about the community in which you live?

__I feel that we are a part of this community and accepted just as others.

__I feel that we are a part of this community but are not accepted as much as others.

__I feel that we are somewhat isolated from the organizations and activities.

__I feel that the community doesn't care about us at all.

26. How important do you feel that it is to the following people, that you participate regularly in outdoor recreational activity?

	a. Friends	b. Family	c. Community
Very unimportant	____	____	____
Unimportant	____	____	____
Little importance	____	____	____
Important	____	____	____
Very important	____	____	____

27. How important do you feel it is to the following people that you participate regularly in snowmobiling?

	a. Friends	b. Family	c. Community
Very unimportant	____	____	____
Unimportant	____	____	____
Little importance	____	____	____
Important	____	____	____
Very important	____	____	____

28. How many of your friends own snowmobiles?_____

29. What is your opinion of people around here who are always the first to purchase new outdoor recreational equipment?

___Very Favorable ___Favorable ___Undecided ___Unfavorable ___Very Unfavorable

30. In this community most recreational enthusiasts favor new recreational ideas and products.

___Strongly Agree ___Agree ___Undecided ___Disagree ___Strongly Disagree

31. On the following page, there is a list of opposite paired terms which represent certain general aspects of people. For each pair of terms, please check the number which best describes your feeling about yourself.

For example, the first pair of terms is mobile-immobile. If you define yourself to be very mobile, then you would check 1 on the scale since it's closest to the adjective.

I Am:

Example								
Mobile	X							Immobile
	1	2	3	4	5	6	7	
Traits								
a. Mobile								Immobile
	1	2	3	4	5	6	7	
b. Close to Nature								Detached from Nature
	1	2	3	4	5	6	7	
c. Passive								Active
	1	2	3	4	5	6	7	
d. Individualistic								Conformist
	1	2	3	4	5	6	7	
e. Indoors type								Out of doors type
	1	2	3	4	5	6	7	
f. Healthy								Unhealthy
	1	2	3	4	5	6	7	
g. Strong								Weak
	1	2	3	4	5	6	7	
h. Leisurely								Work Oriented
	1	2	3	4	5	6	7	
i. Innovative								Traditional
	1	2	3	4	5	6	7	
j. Rural								Urban
	1	2	3	4	5	6	7	

32. In general, in which of these categories would you consider yourself to be in regard to new things?

_____I like to try anything new which comes along.

_____I like to try new ideas but I wait until I am quite familiar with them.

_____I like to try new ideas only after I have discussed them with other people and have seen them demonstrated.

_____I just don't like to try new ideas.

Questions 33 thru 35 deal with information sources used in deciding to purchase a snowmobile.

33. Where or from whom did you first hear about snowmobiles?_____

_____

34. After you first heard about snowmobiles, where did you get information about it that helped you decide whether or not you liked the idea of snowmobiles?

_____

35. After you found out enough about snowmobiles to know that you liked them, where did you get the information to help you decide to definitely purchase one?

_____

36. In what year did you first purchase a snowmobile?_____

37. What brand was it? (Polaris, Ski doo, Artic Cat, etc.)_____

38. Do you still own the same snowmobile?

___Yes ___No (If no -- explain)_____

_____

39. Do you use your snowmobile as much as you thought you would when you bought it?

___Yes ___No If no, why not?_____

40. Does your household have more than one snowmobile?

___Yes ___No If yes, how many?_____

41. How many members of your family use the snowmobile(s)?

___(a)1 ___(b)2 ___(c)3 ___(d)4 ___(e)5 or more

42. When you bought your snowmobile, did you

___(a) give the purchase a lot of thought?

___(b) buy impulsively?

___(c) Neither (Explain)_____

43. Do you know your snowmobile dealer personally?

___Yes ___No

44. How many visits did you make to your snowmobile dealer before buying your snowmobile?_____

45. How did you learn to operate a snowmobile?_____

46. Would you sell your snowmobile if you could (Check one)

____A. Make a profit on it by Receiving as a cash payment an amount larger than the amount (including value of trade in) that you paid for it?

____B. Receive as a cash payment the exact amount (including value of trade in) that you paid for it?

____C. Receive as a cash payment 80% of the exact amount (including value of trade in) that you paid for it?

____D. Receive as a cash payment 60% of the exact amount (including value of trade in) that you paid for it?

____E. Receive as a cash payment 40% of the exact amount (including value of trade in) that you paid for it?

____F. Receive as a cash payment 20% of the exact amount (including value of trade in) thay you paid for it?

____G. Have someone move it off your property without charge?

47. For each piece of snowmobile equipment, please indicate (a) whether or not you own the equipment (b) the year you first purchased it and (c) the average percent of the time when you are using your snowmobile that this equipment is also used.

		Year	% of Snowmobiling Time it is used
(a) Snowmobile safety flag	___Yes ___No	(If yes)____	___%
(b) Trail groomer	___Yes ___No	(If yes)____	___%
(c) Mobile field barbeque	___Yes ___No	(If yes)____	___%

48. Have you written during the past year to any snowmobile manufacturer or other expert for information or advice about some aspect of snowmobiling?

___No ___Yes (if yes -- who?)_____ _____

49. To how many formal organizations do you presently belong; such as church, lodge, farmer's cooperatives, service organizations and so on?_____

50. In the organizations to which you belong which of the following best describes your general participation? (Check one)

_____(a) Am not very active

_____(b) Am a reliable member but do not wish to hold a position of importance

_____(c) Am a reliable member and would like to hold an office, but have never had one

_____(d) Have held at least one important office

_____(e) Have held several important offices

51. From the list of activities below, between Memorial Day 1973 and Memorial Day 1974, in which activities did you participate?

ACTIVITY	Frequently	Occasionally	No
a. Bicycling			
b. Horseback riding			
c. Baseball-softball			
d. Football			
e. Basketball			
f. Volleyball			
g. Badminton			
h. Swim-outdoor pool			
i. Swim-lake, river, pond			
j. Motor bike-motorcycling			
k. Attend outdoor sports events			
l. Ice skating			
m. Sliding, sledding, tobogganing			

51. Continued

ACTIVITY	Frequently	Occasionally	No
n. Target-Trap shooting			
o. Hunting (small game)			
p. Hunting (big game)			
q. Hunting (water fowl)			
r. Fishing			
s. Ice fishing			
t. Hiking, walking for pleasure			
u. Nature walks			
v. Bird watching			
w. Nature photography			
x. Picking mushrooms, nuts, berries			
y. Driving for pleasure-sight seeing			
z. Family-small group picnics			
aa. Golf, regular			
bb. Camp-wheeled vehicle			
cc. Power boat-ski			
dd. Snowmobiling			
ee. Sailing			
ff. Canoeing			
gg. Snow skiing			
hh. Miniature golf			
ii. Soccer			
jj. Tennis			
kk. Horseshoes			

51. Continued

ACTIVITY	Frequently	Occasionally	No
ll. Mountain or rock climbing			
mm. Attending outdoor plays, concerts, etc.			
nn. Camping-tent			
oo. Group camping (youth camps, Church groups, etc.)			
pp. Large group picnics			
qq. Archery			
rr. Gardening (flower or vegetable)			
ss. Other boating (rowboat, small motor, fishing, etc.)			
tt. Other (specify)			

52. The whole purpose of snowmobiling is to: _____

_____

53. Is snowmobiling dangerous?

_____Yes _____No

54. Should snowmobiles be allowed on: (Write Yes or No in each blank)

_____(a) main highways _____(c) unplowed highways

_____(b) secondary highways _____(d) streets

55. Should children under 14 be allowed to operate snowmobiles?

(a) without supervision ___Yes ___No

(b) with supervision ___Yes ___No

Questions 56 thru 59 deal with snowmobile safety rules. Circle the correct answer, TRUE or FALSE.

56. There is no age limitation for the operation of a snowmobile except in crossing or traveling on highways. TRUE FALSE

57. A duly registered and licensed snowmobile may be operated in either ditch outside the roadway of other than controlled-access highways. TRUE FALSE

58. A snowmobile on a highway, operated during hours of darkness, must display a lighted head lamp and tail lamp. TRUE FALSE

59. Two snowmobiles should not run side by side on ice. TRUE FALSE

60. The following statements represent various opinions people have about physical fitness, work and leisure. The statements are in no way "True" versus "False" or "Correct" versus "Incorrect". Please indicate whether you Strongly Agree, Agree or Undecided, Disagree or Strongly Disagree with each statement. For example, if you disagree with a statement, circle the letter "D' next to the statement. If you strongly agree, then you would circle"SA".

a. The constructive use of leisure time is the answer to many of the problems now facing the American society.	SA	A	U	D	SD
b. The only way I can justify my leisure time is to work for it.	SA	A	U	D	SD
c. I generally feel guilty when I enjoy leisure for more than a short time.	SA	A	U	D	SD
d. Leisure serves no useful purpose in life.	SA	A	U	D	SD
e. My leisure activities are just as important to me as work activities.	SA	A	U	D	SD
f. I would like a shorter work week in order to have more time for other things.	SA	A	U	D	SD
g. The only satisfaction I get out of life is working.	SA	A	U	D	SD
h. Most people know how to spend their time wisely.	SA	A	U	D	SD
i. My chief reason for working is to pay for my leisure activities.	SA	A	U	D	SD
j. I feel guilty when I am on vacation because I am not working.	SA	A	U	D	SD
k. Most people spend too much time enjoying themselves today.	SA	A	U	D	SD
l. Even if I were financially able, I couldn't stop working.	SA	A	U	D	SD
m. Physical fitness is a necessity for a productive life.	SA	A	U	D	SD
n. People are becoming so oriented toward working they don't have time to enjoy life.	SA	A	U	D	SD

o.	I've had to work hard for everything that I've gotten in life.	SA	A	U	D	SD
p.	Time spent to improve a person's physical condition is time well spent.	SA	A	U	D	SD
q.	I like to travel and see various parts of the country.	SA	A	U	D	SD
r.	The worst part about being sick is that work doesn't get done.	SA	A	U	D	SD
s.	Physical fitness activities are valuable for maintaining health.	SA	A	U	D	SD
t.	Regular vacations are an important fringe benefit to any job.	SA	A	U	D	SD
u.	Hard work still counts for more in a successful career than all of the new ideas you read about in books and pamphlets.	SA	A	U	D	SD
v.	Idleness is the devil's work shop.	SA	A	U	D	SD
w.	Every school system should include a physical education program.	SA	A	U	D	SD
x.	Recreation and leisure contribute to better mental health.	SA	A	U	D	SD
y.	All work and no play makes Jack a dull boy.	SA	A	U	D	SD
z.	More people ought to pursue outdoor recreational activities.	SA	A	U	D	SD
aa.	Good body condition contributes to greater mental alertness.	SA	A	U	D	SD
bb.	Visiting outdoor spots like streams, mountains, and lakes makes life a lot more enjoyable.	SA	A	U	D	SD
cc.	Physical fitness activities are increasing in their value to mankind.	SA	A	U	D	SD
dd.	New fangled ideas in recreational equipment make a person's life too complicated.	SA	A	U	D	SD
ee.	The most important consideration a person should think about in making decisions, is what has worked in the past.	SA	A	U	D	SD
ff.	I think traditional ways are the best ways of doing things.	SA	A	U	D	SD
gg.	Time spent in learning about new recreational ideas is time well spent.	SA	A	U	D	SD

hh. To deny one's past and break with it is to uproot the people and the weak will perish. SA A U D SD

ii. Mankind's basic hope is a change in his future social and economic conditions. SA A U D SD

jj. The good old days were golden. SA A U D SD

61. The size of my hometown can be described as:

_____I live on a farm

_____Less than 1,000

_____1,000-2,500

_____2,500-10,000

_____10,000-25,000

_____25,000-50,000

_____50,000+

62. How many years have you lived in this area? (Within 50 miles of PRESENT HOME)

_____

63. How many years have you lived in South Dakota?_____

64. My sex is: _____Female

_____Male

65. My occupation is_____.

66. My age is_____years.

67. How many years of formal education have you completed? (CIRCLE NUMBER)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 greater than 17

68. My overall health can generally be described as

_____Very Good _____Good _____Fair _____Poor _____Very Poor

69. Approximately, how many miles have you and your family driven the snowmobile you presently own (easily obtained from mileage meter)_____miles.

70. Our final question involves a comparison of recreational activities of South Dakotans as determined by family income. From the categories below, please indicate the letter which best represents your family income before taxes in 1973.

a.____Under 1,000

b.____1,000-2,999

c.____3,000-4,999

d.____5,000-6,999

e.____7,000-8,999

f.____9,000-10,999

g.____11,000-12,999

h.____13,000-14,999

i.____15,000-16,999

j.____17,000-18,999

k.____19,000-20,999

l.____21,000-29,999

m.____30,000+

APPENDIX II

LEISURE ORIENTATION SCALE

The leisure orientation scale is composed of 21 items. The Likert technique gives five possible responses to each of these statements, (Strongly Agree = SA, Agree = A, Undecided = U, Disagree = D, and Strongly Disagree = SD). These responses are assigned scores that reflect the extent of agreement with the statement, (SA = 5, A = 4, U = 3, D = 2, and SD = 1). The scoring is reversed for statements which express a negative attitude towards leisure. The items, their polarity, and the percent of respondents indicating each alternative are presented below.

		Polarity	SA	A	U	D	SD	No answer
1.	The constructive use of leisure time is the answer to many of the problems now facing American society.	+	110 (47.6)*	98 (42.4)	11 (4.8)	11 (4.8)	1 (0.4)	8
2.	The only way I can justify my leisure time is to work at it.	-	9 (3.9)	33 (14.2)	13 (5.6)	111 (47.8)	66 (28.4)	7
3.	I generally feel guilty when I enjoy leisure for more than a short time.	-	51 (22.2)	97 (42.2)	16 (7.0)	49 (21.3)	17 (7.4)	9
4.	Leisure serve no useful purpose in life.	-	157 (68.0)	58 (25.1)	7 (3.0)	6 (2.6)	3 (1.3)	8
5.	My leisure activities are just as important to me as work activities.	+	94 (40.5)	87 (37.5)	16 (6.9)	32 (13.8)	3 (1.3)	7

	Polarity	SA	A	U	D	SD	No answer
6. The only satisfaction I get out of life is working.	-	15 (6.6)	70 (30.7)	41 (18.0)	62 (27.2)	40 (17.5)	11
7. I feel guilty when I am on vacation because I am not working.	-	77 (33.2)	121 (52.2)	14 (6.0)	16 (6.9)	4 (1.7)	7
8. Most people spend too much time enjoying themselves today.	-	34 (14.8)	98 (42.6)	45 (19.6)	44 (19.1)	9 (3.9)	9
9. I like to travel and see various parts of the country.	+	80 (34.3)	137 (58.8)	11 (4.7)	4 (1.7)	1 (0.4)	6
10. The worst part about being sick is that work doesn't get done.	-	14 (6.1)	90 (39.0)	31 (13.4)	66 (28.6)	30 (13.0)	8
11. Regular vacations are an important fringe benefit to any job.	+	76 (32.8)	123 (53.0)	18 (7.8)	10 (4.3)	5 (2.2)	7
12. Hard work still counts for more in a successful career than all of the new ideas you read about in books and pamphlets.	-	6 (2.6)	25 (10.9)	28 (12.2)	123 (53.7)	47 (20.5)	10
13. Idleness is the devil's workshop.	-	14 (6.0)	37 (15.9)	28 (12.1)	106 (45.7)	47 (20.3)	7
14. All work and no play makes Jack a dull boy.	+	87 (37.3)	119 (51.1)	18 (7.7)	8 (3.4)	1 (0.4)	6
15. More people ought to pursue outdoor recreational activities.	+	69 (29.9)	129 (58.8)	29 (12.6)	4 (1.7)	0 (0.0)	8

	Polarity	SA	A	U	D	SD	No answer
16. I would like a shorter work week in order to have more time for other things.	+	94 (40.5)	87 (37.5)	16 (6.9)	32 (13.8)	3 (1.3)	7
17. My chief reason for working is to pay for my leisure activities.	+	13 (5.7)	28 (12.2)	22 (9.6)	122 (53.0)	45 (19.6)	9
18. Even if I were financially able, I couldn't stop working.	-	11 (4.7)	41 (17.7)	20 (8.6)	119 (51.3)	41 (17.7)	7
19. People are becoming so oriented towards work they don't have time to enjoy life.	+	13 (5.7)	62 (27.2)	31 (13.6)	107 (46.9)	15 (6.6)	11
20. I've had to work hard for everything that I've gotten in life.	+	78 (33.5)	125 (53.6)	10 (4.3)	19 (8.2)	1 (0.4)	6
21. Recreation and leisure contribute to better mental health.	+	91 (39.2)	125 (53.9)	11 (4.7)	3 (1.3)	2 (0.9)	7

*Figures in parentheses indicate percentages.

Leisure Orientation Composite Scores:

low	44	mean	73.764
high	105	S.D.	7.910
range	61	variance	62.572

RELIABILITY ANALYSIS FOR LEISURE ORIENTATION SCALE*

Scale Items	Mean	Standard Deviation	Corrected Item-Total Correlation	Alpha if Item Deleted
1	4.3333	0.80116	0.14145	0.72053
2	2.19444	1.10355	0.27583	0.71129
3	3.50000	1.23890	0.49280	0.68791
4	4.57407	0.76193	0.35338	0.60635
5	4.05903	1.03078	0.45123	0.69497
6	4.17130	0.77957	0.49435	0.69633
7	4.07870	0.90903	0.48656	0.69397
8	3.45833	1.06885	0.53815	0.68588
9	4.21759	0.66393	0.16796	0.71827
10	3.00000	1.17730	0.10728	0.72854
11	4.12963	0.84735	0.34873	0.70575
12	2.21296	0.97457	0.16105	0.72059
13	2.43518	1.15556	0.26537	0.71260
14	4.21296	0.74147	0.31309	0.70921
15	4.12500	0.68751	0.21140	0.71577
16	3.18056	1.21991	0.27831	0.71171
17	2.28704	1.06575	0.27059	0.71164
18	2.41204	1.10460	0.25447	0.71334
19	2.78704	1.08736	0.11817	0.72584
20	4.10648	0.82561	-0.12727	0.73892
21	4.29630	0.67181	0.39526	0.70507

*Cronbach's Coefficient Alpha = 0.72066.

N = 216.

INTERCORRELATION BETWEEN ITEMS IN LEISURE ORIENTATION SCALE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	---																				
2	-0.18939	---																			
3	0.08435	0.26876	---																		
4	0.33272	-0.03934	0.31535	---																	
5	0.14631	0.07712	0.37696	0.19949	---																
6	0.19659	0.19899	0.29136	0.34266	0.31323	---															
7	0.14263	0.23504	0.55548	0.35753	0.26375	0.29593	---														
8	0.05975	0.26321	0.44783	0.29794	0.29534	0.35190	0.37914	---													
9	0.21277	-0.10689	0.12157	0.11050	0.16723	0.14332	0.15645	0.02922	---												
10	-0.23670	0.10072	0.14031	0.13481	-0.08049	0.15203	0.24338	0.18111	-0.04760	---											
11	0.17177	0.16193	0.15064	0.19398	0.18411	0.25492	0.14973	0.22168	0.16458	-0.10257	---										
12	-0.12768	0.33757	0.16179	0.07888	0.00104	0.06808	0.11225	0.15591	-0.12946	0.25133	-0.03922	---									
13	-0.11723	0.22512	0.20468	0.08472	0.16093	0.17502	0.12664	0.25952	-0.11187	0.15385	0.03712	0.32207	---								
14	0.21962	-0.03947	0.19240	0.16954	0.28394	0.31478	0.24414	0.19905	0.16998	0.03730	0.32600	-0.15317	-0.06524	---							
15	0.14355	-0.09349	0.05734	0.16426	0.23381	0.13343	0.14791	0.08624	0.14393	-0.15515	0.22754	-0.08851	-0.07464	0.35812	---						
16	0.03607	0.06363	0.07232	0.03308	0.22568	0.12872	0.07940	0.19307	0.09483	-0.02591	0.05824	0.08879	0.10897	0.06013	0.05615	---					
17	0.06718	0.15006	0.16909	-0.02058	0.16445	0.05251	0.18781	0.17387	-0.02295	-0.08526	0.12657	0.04387	0.18891	0.07532	0.13489	0.26046	---				
18	-0.10862	0.26593	0.13425	-0.07236	0.12854	0.11750	0.07872	0.15840	0.02305	0.08941	0.18120	0.16006	0.22326	-0.02813	0.03598	0.21722	0.15983	---			
19	0.06051	0.06180	-0.07251	0.01352	0.10102	0.07616	-0.08178	0.16441	0.07093	-0.13080	0.08058	-0.07551	-0.0[illegible]104	0.03921	0.8555	0.24301	0.10517	0.09663	---		
20	0.15001	-0.33934	-0.10231	0.06504	0.10291	0.00043	-0.10418	-0.15571	0.12724	-0.14834	0.00677	-0.25376	-0.15605	0.04636	0.10755	0.01777	0.03382	-0.18604	0.05646	---	
21	0.24772	-0.05298	0.22912	0.21135	0.20707	0.33780	0.15966	0.22455	0.31360	0.02940	0.38159	-0.04710	0.05481	0.39562	0.33231	0.12170	0.03657	0.09169	0.12498	-0.05719	---

APPENDIX III

TRADITIONALISM SCALE

The traditionalism scale is composed of seven items. Those items expressing the value of traditionalism have positive polarity. The Likert type responses are scored as follows: Strongly Agree = SA = 5, Agree = A = 4, Undecided = R = 3, Disagree = D = 2, and Strongly Disagree = SD = 1. Negative statements, those critical of traditionalism, are reversed in scoring. Items, polarity, and percent of respondents for each response alternative are presented below.

	Polarity	SA	A	U	D	SD	No answer
1. New fangled ideas in recreational equipment make a person's life too complicated.	+	3 (1.3)*	27 (11.7)	59 (25.7)	114 (49.6)	27 (11.7)	9
2. The most important consideration a person should think about in making decisions, is what has worked in the past.	+	12 (5.2)	69 (29.9)	45 (19.5)	96 (41.6)	9 (3.9)	8
3. I think traditional ways are the best ways of doing things.	+	11 (4.8)	23 (10.0)	51 (22.3)	128 (55.9)	16 (7.0)	10
4. Time spent in learning about new recreational ideas is time well spent.	-	3 (1.3)	8 (3.5)	39 (16.9)	157 (68.0)	24 (10.4)	8
5. To deny one's past and break with it is to uproot the people and the weak will perish.	+	2 (0.9)	29 (13.1)	99 (44.8)	80 (36.2)	11 (5.0)	18
6. Mankind's basic hope is a change in his future social and economic conditions.	-	8 (3.6)	30 (13.5)	59 (26.6)	105 (47.3)	20 (9.0)	17
7. The good old days were golden.	+	14 (6.3)	63 (28.1)	44 (19.6)	86 (38.4)	17 (7.6)	15

*Figures in parentheses indicate percentages.

RELIABILITY ANALYSIS FOR TRADITIONALISM SCALE*

Scale Items	Mean	Standard Deviation	Corrected Item-Total Correlation	Alpha if Item Deleted
1	2.41	0.88	0.34	0.35
2	2.86	1.04	0.41	0.29
3	2.46	0.90	0.33	0.35
4	2.16	0.69	0.14	0.44
5	2.69	0.78	0.09	0.46
6	2.54	0.93	-0.04	0.53
7	2.85	1.08	0.21	0.41

*Cronbach's Coefficient Alpha = 0.450.

N = 213.

INTERCORRELATION BETWEEN ITEMS IN TRADITIONALISM SCALE

	1	2	3	4	5	6	7
1	---						
2	0.30578	---					
3	0.23597	0.46199	---				
4	0.23582	0.15758	-0.00710	---			
5	0.04312	0.15080	0.07447	-0.06296	---		
6	0.06364	-0.04735	-0.07216	0.07305	-0.13789	---	
7	0.11242	0.14137	0.18876	0.01320	0.17073	-0.00524	---

APPENDIX IV

FREQUENCY DISTRIBUTIONS FOR OTHER DEPENDENT AND INDEPENDENT VARIABLES

DEPENDENT VARIABLE Y. STEN SCORE DISTRIBUTION
FOR INNOVATIVNESS SCORES

Sten Score	Year of Purchase	Absolute Frequency	Adjusted Relative Frequency	Cumulative Adjusted Frequency
			%	%
9	1957	1	0.4	0.4
9	1958	0	0.0	0.4
9	1959	2	0.9	1.3
9	1960	0	0.0	1.3
9	1961	1	0.4	1.7
8	1962	0	0.0	1.7
8	1963	0	0.0	1.7
8	1964	2	0.9	2.6
8	1965	2	0.9	3.4
8	1966	5	2.1	5.6
7	1967	9	3.8	9.4
7	1968	13	5.6	15.0
6	1969	27	11.5	26.5
5	1970	55	23.5	40.0
4	1971	40	17.1	67.1
3	1972	35	15.0	82.1
2	1973	31	13.2	95.3
1	1974	11	4.7	100.0
Totals		234	100.0	100.0

Missing Observations = 5
Mean Sten Score = 4.432
Median = 4.500
Variance = 3.517
Standard Deviation = 1.875

INDEPENDENT VARIABLE X_0. FREQUENCY DISTRIBUTION FOR PERCEIVED COMMUNITY NORM ON INNOVATIVENESS

In this community, most recreational enthusiasts favor new recreational ideas and products.

	Absolute Frequency	Adjusted Relative Frequency
		%
Strongly Disagree (1)	2	0.9
Disagree (2)	6	2.6
Undecided (3)	52	22.1
Agree (4)	139	59.1
Strongly Agree (5)	36	15.3
Totals	235	100.0

Missing Observations = 4
Mean = 3.855
Median = 3.914
Variance = 0.535
Standard Deviation = 0.731

INDEPENDENT VARIABLE X_1. FREQUENCY DISTRIBUTION FOR PERCEIVED PARENTAL SOCIALIZATION FOR APPRECIATING THE OUTDOORS

Did your parents consciously (intentionally) try to get you to appreciate the out-of-doors?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
No (1)	42	18.3
Sometimes (2)	93	40.4
Frequently (3)	95	41.3
Totals	230	100.0

Missing Observations = 9
Variance = 0.545
Mean = 2.230
Standard Deviation = 0.738
Median = 2.285

INDEPENDENT VARIABLE X_2. ABSOLUTE FREQUENCY AND ADJUSTED RELATIVE FREQUENCY DISTRIBUTION FOR WINTER RECREATIONAL ACTIVITIES ENGAGED IN BETWEEN AGES 12 AND 17

Activity	No (0)	Occasionally or Frequently (1)	No Response
Ice Skating	66 (29.2)*	160 (70.8)	13
Sliding, Sledding, and Toboganning	43 (19.1)	182 (80.8)	14
Ice Fishing	104 (47.3)	116 (52.7)	19
Snowmobiling	137 (63.4)	10 (4.8)	32
Snow Skiing	156 (72.9)	58 (27.1)	25

*Figures in parentheses indicate percentages.

Valid Observations	= 205	Variance	= 1.394
Missing Observations	= 34	Standard Deviation	= 1.181
Mean Activity Total	= 2.620	Range	= 5.000
Median	= 2.685		

INDEPENDENT VARIABLE X_4. FREQUENCY DISTRIBUTION FOR PERCEIVED OPPORTUNITY FOR LEISURE

When I want them, opportunities for recreation and leisure are . . .

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
Never Present (1)	5	2.2
Rarely Present (2)	24	10.3
Sometimes Present (3)	106	45.7
Always Present (4)	97	41.8
Totals	232	100.0

Missing Observations = 7 Variance = 0.547

Mean = 3.279 Standard Deviation = 0.739

Median = 3.325

INDEPENDENT VARIABLE X_5. FREQUENCY DISTRIBUTION FOR PERCEIVED ADEQUACY OF SNOW FOR SNOWMOBILING

Do you feel there is usually enough snow in your area for snowmobiling?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
No (0)	114	48.3
Yes (1)	122	51.7
Totals	236	100.0

Missing Observations = 3

INDEPENDENT VARIABLE X_6. FREQUENCY DISTRIBUTION FOR READING OF OUTDOOR RECREATION ORIENTED MAGAZINES (COSMOPOLITENESS)

Do you read any outdoor recreation oriented magazines regularly?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
No (0)	100	42.0
Yes (1)	138	58.0
Totals	238	100.0

Missing Observations = 1

INDEPENDENT VARIABLE X_7. FREQUENCY DISTRIBUTION FOR MEMBERSHIP IN OUTDOOR RECREATION ORIENTED GROUPS

Are you a member of any outdoor recreation oriented groups?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
No (0)	162	68.6
Yes (1)	74	31.4
Totals	236	100.0

Missing Observations = 3

INDEPENDENT VARIABLE X_8. FREQUENCY DISTRIBUTION FOR MEMBERSHIP IN FORMAL ORGANIZATIONS

To how many formal organizations do you belong; such as church, lodge, farmers cooperatives, service organizations, and so on?

Number of Organizations	Absolute Frequency	Adjusted Relative Frequency
		%
0	26	11.3
1	24	10.4
2	38	16.5
3	59	25.5
4	27	11.7
5	27	11.7
6	9	3.9
7	8	3.5
8	7	3.0
9	1	0.4
10	2	0.9
11	0	0.0
12	1	0.4
13	0	0.0
14	0	0.0
15	2	0.9
Totals	231	100.1

Missing Observations	= 8	Variance	= 2.057
Mean	= 3.277	Standard Deviation	= 2.443
Median	= 2.500	Range	= 15.000

NOTE: Totals in this table and subsequent tables may not equal 100 percent due to rounding.

INDEPENDENT VARIABLE X_9. FREQUENCY DISTRIBUTION FOR LEVEL OF PARTICIPATION IN FORMAL ORGANIZATIONS

In the organizations to which you belong, which of the following best describes your general participation? (Check one)

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
Am not very active (1)	39	18.6
Am a reliable member but do not wish to hold a position of importance (2)	66	31.4
Am a reliable member and would like to hold an office, but have never had one (3)	16	7.6
Have held at least one important office (4)	49	23.3
Have held several important offices (5)	40	19.0
Totals	210	99.9

Missing Observations = 29

Variance = 2.057

Mean = 2.929

Standard Deviation = 1.434

Median = 2.057

INDEPENDENT VARIABLE X_{10}. FREQUENCY DISTRIBUTION FOR PERCEIVED PARENTAL SOCIALIZATION FOR INNOVATIVENESS

Did your parents consciously (intentionally) try to get you to appreciate trying new things?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
No (1)	54	23.2
Sometimes (2)	130	55.8
Frequently (3)	49	21.0
Totals	233	100.0

Missing Observations = 6 Variance = 0.444

Mean = 1.979 Standard Deviation = 0.666

Median = 1.981

INDEPENDENT VARIABLE X_{12}. FREQUENCY DISTRIBUTION FOR SELF-CONCEPT REGARDING INNOVATIVENESS

In general, in which of these categories would you consider yourself to be in regard to new things?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
I like to try anything new which comes along (4)	0	0.0
I like to try new ideas but wait until I am quite familiar with them (3)	77	33.2
I like to try new ideas only after I have discussed them with other people and have seen them demonstrated (2)	109	47.0
I just don't like to try new ideas (1)	46	19.8
Totals	232	100.0

Missing Observations = 7 Variance = 0.515

Mean = 2.866 Standard Deviation = 0.717

Median = 2.858

INDEPENDENT VARIABLE X_{13}. FREQUENCY DISTRIBUTION FOR AGE AT TIME OF THE STUDY

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
10-14	2	0.8
15-19	10	4.1
20-24	13	5.4
25-29	25	10.5
30-34	28	11.9
35-39	36	15.2
40-44	37	15.7
45-49	34	14.3
50-54	23	9.6
55-59	15	6.3
60-64	9	3.7
65-69	5	2.1
Totals	237	99.6

Missing Observations	= 2	Variance	= 143.872
Mean	= 39.865	Standard Deviation	= 11.995
Median	= 39.875	Range	= 54.000

NOTE: Statistics based on age in years before data was grouped into categories.

INDEPENDENT VARIABLE X_{14}. FREQUENCY DISTRIBUTION FOR EDUCATION

How many years of formal education have you completed?

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
1	1	0.4
2	0	0.0
3	1	0.4
4	0	0.0
5	0	0.0
6	0	0.0
7	1	0.4
8	37	15.7
9	9	3.8
10	7	3.0
11	9	3.8
12	107	45.3
13	11	4.7
14	21	8.9
15	3	1.3
16	18	7.6
17	1	0.4
Greater than 17 (18)	10	4.2
Totals	236	99.9

Missing Observations = 3
Mean = 11.898
Median = 11.995
Variance = 7.360
Standard Deviation = 2.713
Range = 17.000

INDEPENDENT VARIABLE X_{15}. FREQUENCY DISTRIBUTION FOR SIZE OF HOMETOWN

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
I live on a farm (1)	90	38.0
Less than 1,000 (2)	32	13.5
1,000-2,500 (3)	23	9.7
2,500-10,000 (4)	31	13.1
10,000-25,000 (5)	20	8.4
25,000-50,000 (6)	21	8.9
50,000+ (7)	20	8.4
Totals	237	100.0

Missing Observations = 2 Variance = 4.288

Mean = 3.008 Standard Deviation = 2.071

Median = 2.391

INDEPENDENT VARIABLE X_{16}. FREQUENCY DISTRIBUTION FOR INCOME

Response Category	Absolute Frequency	Adjusted Relative Frequency
		%
1,000-2,999 (1)	3	1.4
3,000-4,999 (2)	5	2.4
5,000-6,999 (3)	6	2.9
7,000-8,999 (4)	23	11.0
9,000-10,999 (5)	32	15.3
11,000-12,999 (6)	32	15.3
13,000-14,999 (7)	28	13.4
15,000-16,999 (8)	25	12.0
17,000-18,999 (9)	9	4.3
19,000-20,999 (10)	9	4.3
21,000-29,999 (11)	19	9.1
30,000+ (12)	18	8.6
Totals	209	100.0

Missing Observations = 30 Variance = 7.653

Mean = 8.019 Standard Deviation = 2.766

Median = 7.625

APPENDIX V

METHODOLOGICAL EXAMINATION OF PARTIAL CORRELATION ANALYSIS FINDINGS

In this appendix, the results of the partial correlation analysis presented in Chapter V are further examined.

It has been noted that the zero-order correlation between X_0 (perceived community norm on innovativeness) and Y (individual innovativeness sten scores) is not significant at the 0.05 level ($r = 0.0775$). This does not necessarily mean that there is no statistically significant relationship between the two variables. It is possible that under certain conditions controlling for other variables would increase the value of r. This is the case when a suppressor relationship exists. Nie et al. (1975:305) noted that such relationships often take the form of "A shows no relationship to B because A is negatively related to C which is positively related to B." Therefore, even though the zero-order correlation is not significant, it is still useful to examine the partial correlations.

Another function of partial correlation analysis is to unmask spurious relationships between variables.

> A spurious correlation is defined in a relationship between two variables, A and B for example, in which A's correlation with B is solely the result of the fact that A varies along with some other variable, C for example, which is indeed the true predictor of B. In this case, when the effects of C are controlled, held constant, etc., B no longer varies with A (Nie et al. 1975:303).

One or more of the individual effects variables may be causing both X_0 and Y to vary in such a way that a positive correlation is obtained when in fact no true relationship between them exists. Partial correlation analysis clarifies the relationship between X_0 and Y by exposing suppressor relationships and spurious correlations.

The first-order partial correlation controls for X_{12}, self-concept regarding innovativeness. The correlation between X_0 and Y is essentially unchanged when X_{12} is held constant. This occurs because self-concept does not share overlapping variance with X_0 and Y.

The second-order partial correlation adds a control for X_{13}, age. The correlation ($r = 0.0916$) is significant at the 0.087 level. While this does not meet the criterion of 0.05, it does approach this level. The increased value of r is evidence of a suppressor relationship. Age is negatively related to community norm on innovativeness ($r = -0.03479$) and positively related to innovativeness ($r = +0.32136$). This has the effect of masking part of the relationship between community norm on innovativeness and innovativeness scores.

The third-order partial correlation which controls for education as well as self-concept and age is nearly the same as the second-order value ($r = 0912$). Age, like self-concept, shares no overlapping variance with X_0 and Y.

The correlation between X_0 and Y decreases as further controls are exerted to remove the effects of spurious correlation. Addition of X_{16} (income) gives a fourth-order partial of $r = 0.0847$ which is significant at the 0.121 level. The fifth-order partial also controls for X_4 (perceived opportunity for leisure) giving a correlation of $r = 0.0829$ with a significance of 0.127. When all 15 individual effects variables are controlled, the correlation that remains in only $r = 0.0296$ which has a significance level of 0.370.

The null hypothesis of no relationship between variation in community norm on innovativeness as perceived by the individual (X_0) and individual innovativeness scores (Y) cannot be rejected at the 0.05 level. There is a small, but not significant, relationship of the expected sign. While a suppressor relationship appeared to hide some of the structural effect, additional controls for individual effects diminished the already weak correlation. The evidence does not support the influence of structural effects on innovativeness with regard to the purchase of snowmobiles.

APPENDIX VI

THE TIME FRAME LIMITATION

The difference in time between an individual's adoption of the snowmobile and his completion of the questionnaire for this study was as great as 17 years, in some cases. In this appendix, an attempt is made to estimate the effect of changes occurring in the independent variables during this time lag. One variable, age, is examined since this is the only variable whose value can be determined from available information for both the time of adoption and the time of response to the questionnaire.

Some individuals were included in the sample who were too young to have an opportunity to adopt the innovation when it first became available. The youngest owner to respond to the study was 13 in 1974. It would be impossible for him to have a high sten score for innovativeness because he was not born yet in 1957 when the earliest snowmobile adoptions occurred. The people who were too young to have had the opportunity to buy a snowmobile in 1957 can be excluded from analysis. If only respondents who were 13 or older in 1957 are retained, the number of cases drops from N= 239 to N= 189. Variable X_{13}, age, is measured for this analysis as age at time of purchase of the snowmobile rather than age in 1974. The tables on pages 137 and 138 show the results of partial correlation and multiple regression analyses for this selected group. Results of the analyses indicate that the structural effect is still not significant. Age, leisure orientation, and perceived opportunity for leisure remain statistically significant. There are shifts in significance for membership in formal organizations, size of hometown, and perceived adequacy of

snow for snowmobiling. However, even for these variables, the pattern of the F values is similar to that of the original analysis.

COMPARISON OF ZERO-ORDER AND PARTIAL-ORDER CORRELATION COEFFICIENTS OF PERCEIVED COMMUNITY NORM WITH INNOVATIVENESS FOR RESPONDENTS 13 OR OLDER IN 1957

Independent Variable	Dependent Variable	Control Variable	r	Level of Significance
Zero-order correlation perceived community norm	Innovativeness		0.0601	0.213
First-order correlation perception of community innovativeness norm	Innovativeness	Self-Concept	0.0606	0.212
Second-order	Innovativeness	Age at Purchase	0.0676	0.188
Third-order	Innovativeness	Education	0.0697	0.182
Fourth-order	Innovativeness	Income	0.0476	0.279
Fifth-order	Innovativeness	X_1 through X_{10} X_{12} through X_{16}	0.0197	0.424

MULTIPLE REGRESSION ANALYSIS OF STRUCTURAL AND INDIVIDUAL EFFECTS AS PREDICTORS OF SNOWMOBILER INNOVATIVENESS FOR RESPONDENTS 13 OR OLDER IN 1957

Independent Variable		r	b	$S_{\bar{X}}$	β	F
STRUCTURAL EFFECT						
X_0	perceived community norm on innovativeness	0.02677	0.03937	0.20521	0.01743	0.037
INDIVIDUAL EFFECTS RELATED TO RECREATION						
X_1	perceived parental socialization for appreciating the outdoors	0.09114	0.19997	0.26611	0.08515	0.565
X_2	number of winter recreational activities engaged in between ages 12 and 17	0.29123**	0.12555	0.15204	0.08295	0.682
X_3	leisure orientation	0.12487	0.04899	0.2507	0.19520	3.818**
X_4	perceived opportunity for leisure	0.13772	0.35828	0.22086	0.14547	2.632**
X_5	perceived adequacy of snow for snowmobiling	-0.07757	-0.50202	0.33285	-0.14127	2.275*
X_6	reading of outdoor recreation oriented magazines (cosmopoliteness)	0.13368	0.10293	0.34148	0.02857	0.091

Independent Variable		r	b	$S_{\bar{X}}$	β	F
X_7	membership in outdoor recreation oriented groups	0.10964	0.22520	0.35897	0.06012	0.393
INDIVIDUAL EFFECTS--OTHER						
X_8	membership in formal organizations	0.16543*	0.11793	0.08394	0.14317	1.974
X_9	level of participation in formal organizations	0.02578	-0.08502	0.13327	-0.06896	0.407
X_{10}	perceived parental socialization for innovativeness	0.06192	-0.01094	0.34301	-0.00374	0.001
X_{12}	self-concept regarding innovativeness	0.03931	0.05627	0.26264	0.02068	0.046
X_{13}	age at time of purchase	0.40865**	0.09966	0.02101	0.45230	22.511**
X_{14}	education	-0.12789	-0.01229	0.06575	-0.01780	0.035
X_{15}	size of hometown	-0.05472	-0.09549	0.07568	-0.11803	1.592
X_{16}	income	-0.09330	-0.08930	0.06412	-0.13350	1.940

*$P \leq 0.05$
**$P \leq 0.01$

For all independent variables combined, $R^2 = 0.32666$;
$F = 2.88045$;
$P \leq 0.01$;
$\hat{R}^2 = 0.21326$